FEBRUARY, 1922

VOLUME 8 NUMBER 2

MINERAL TARIFFS AND MINING MEN

By Herbert Wilson Smith

Striking and salient points concerning the relationship between the mining industry and the tariff question are presented clearly by an authority.

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By C. E. Watts

A comprehensive study of the subject in its application to mining practice, laying strong emphasis upon the value of "System" as a factor inviting increased efficiency and economies in mining.

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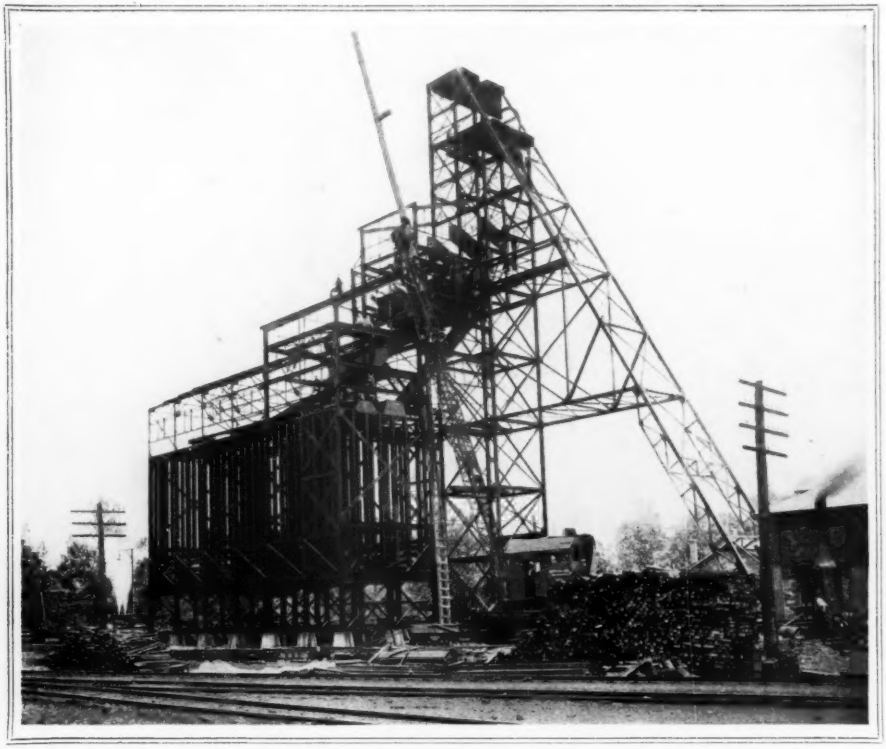

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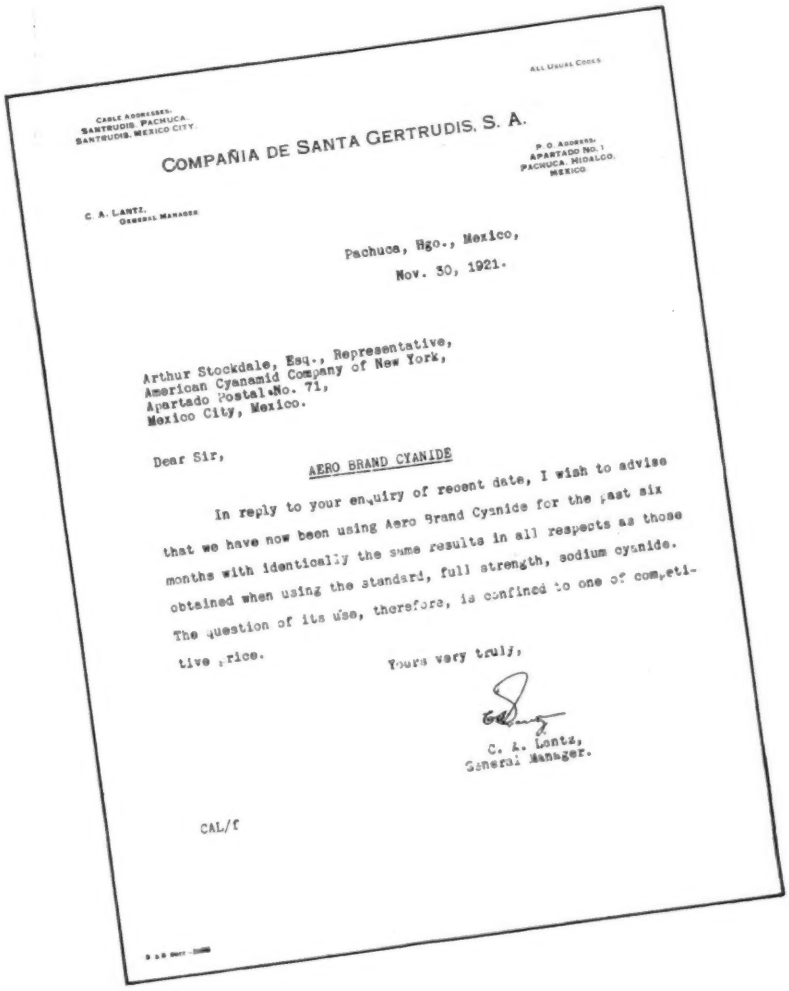

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THE MINING CONGRESS JOURNAL

FEBRUARY 1922

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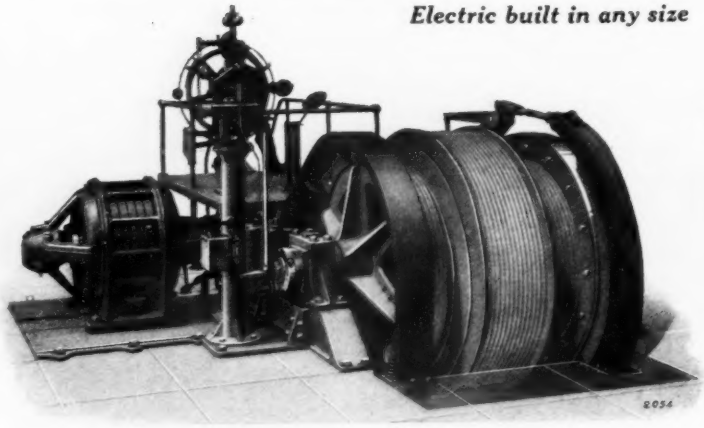

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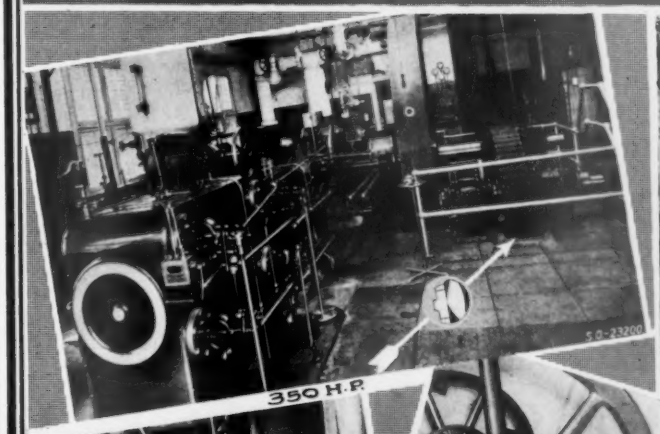

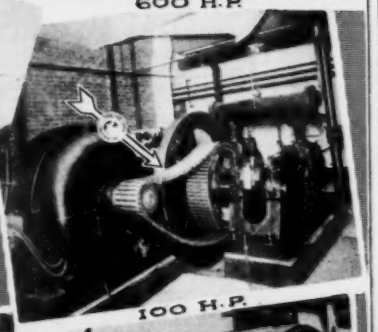

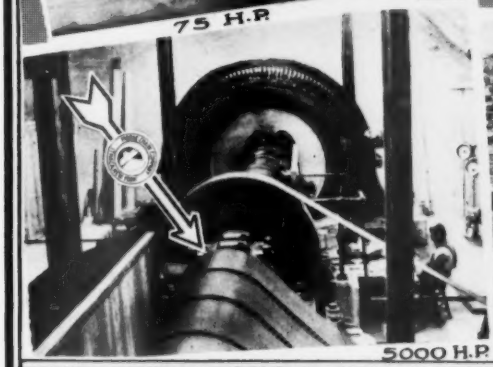

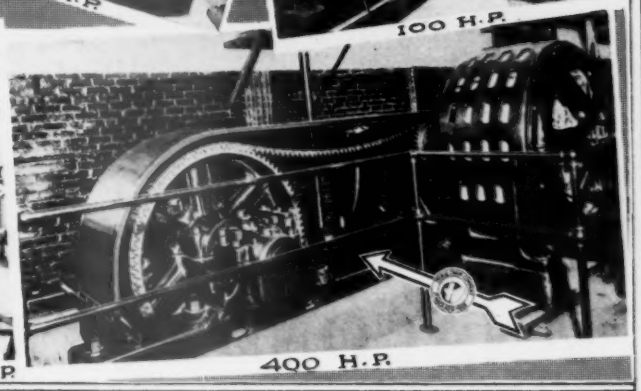

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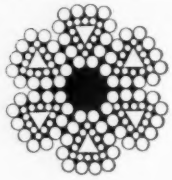

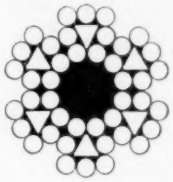

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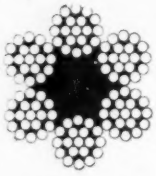

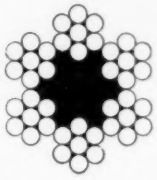

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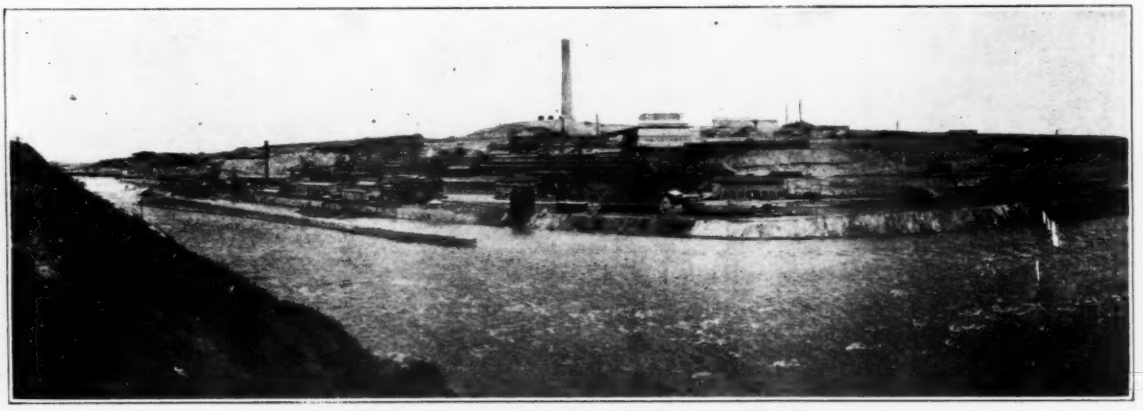

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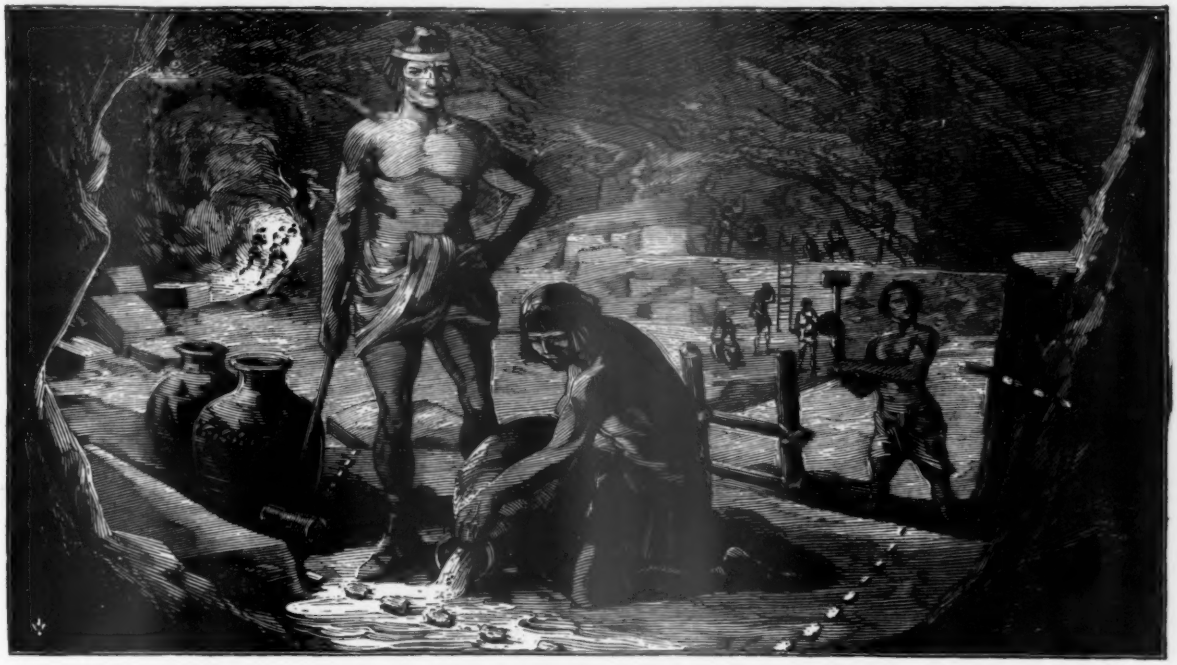

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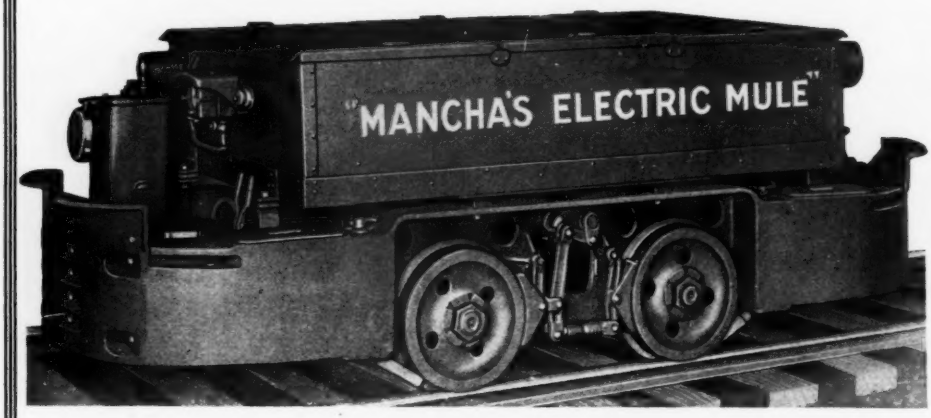

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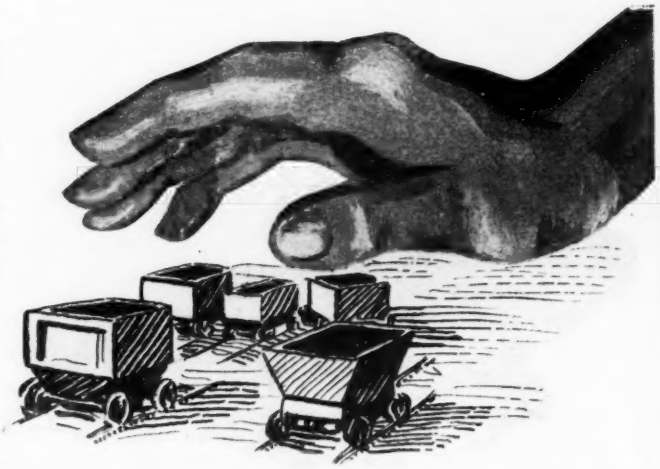

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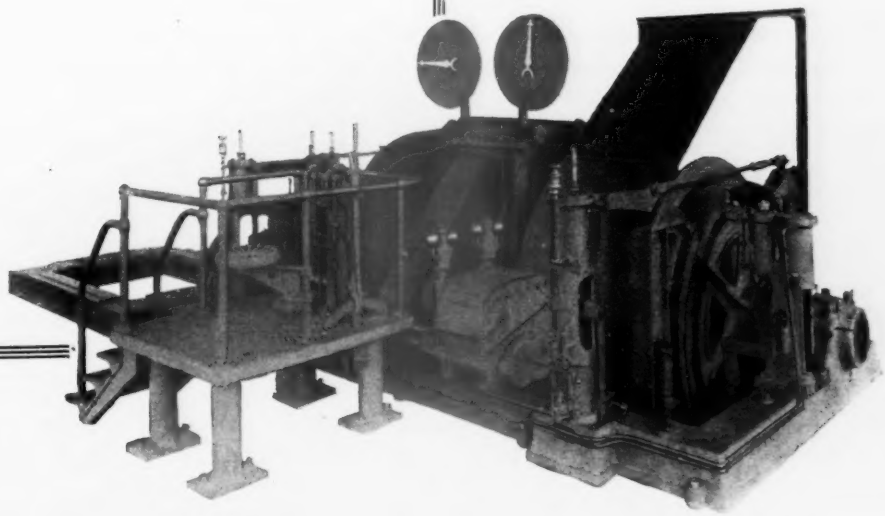

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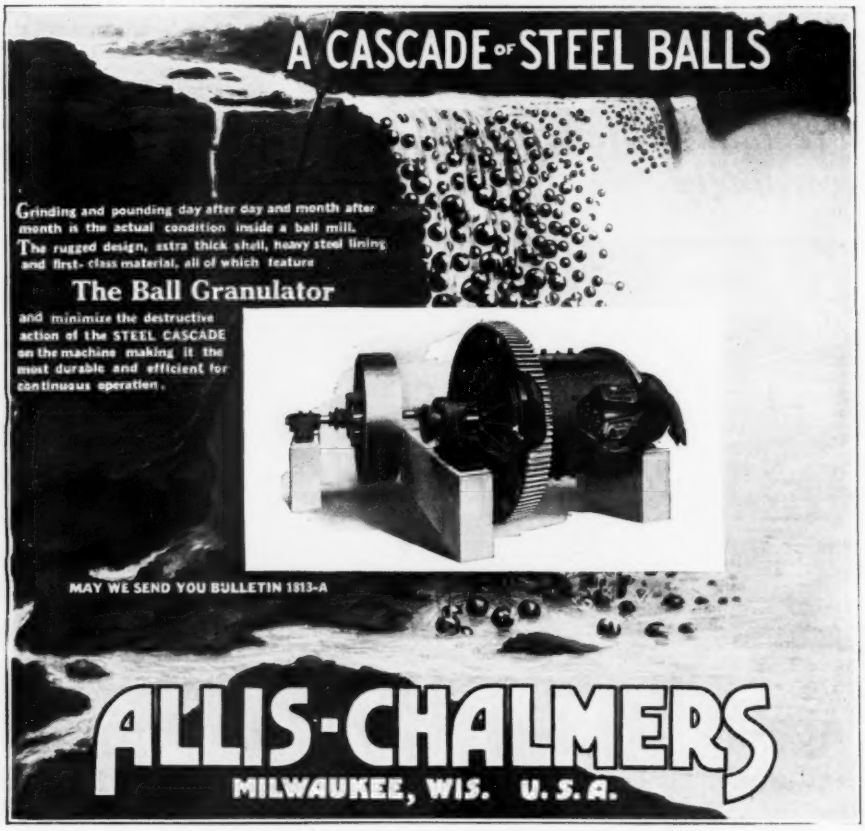
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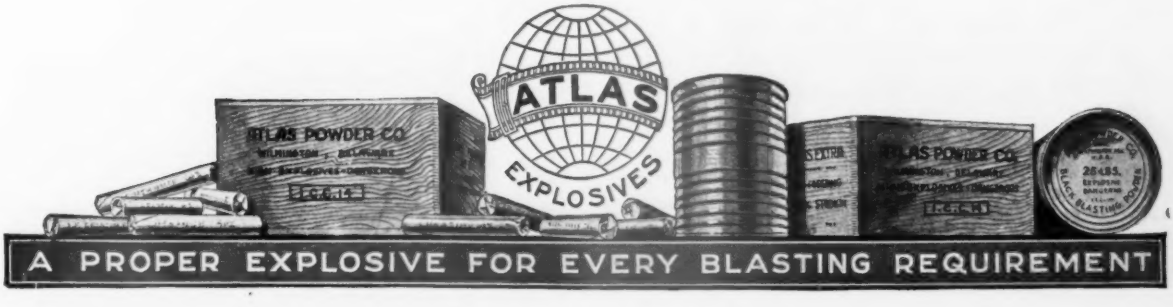

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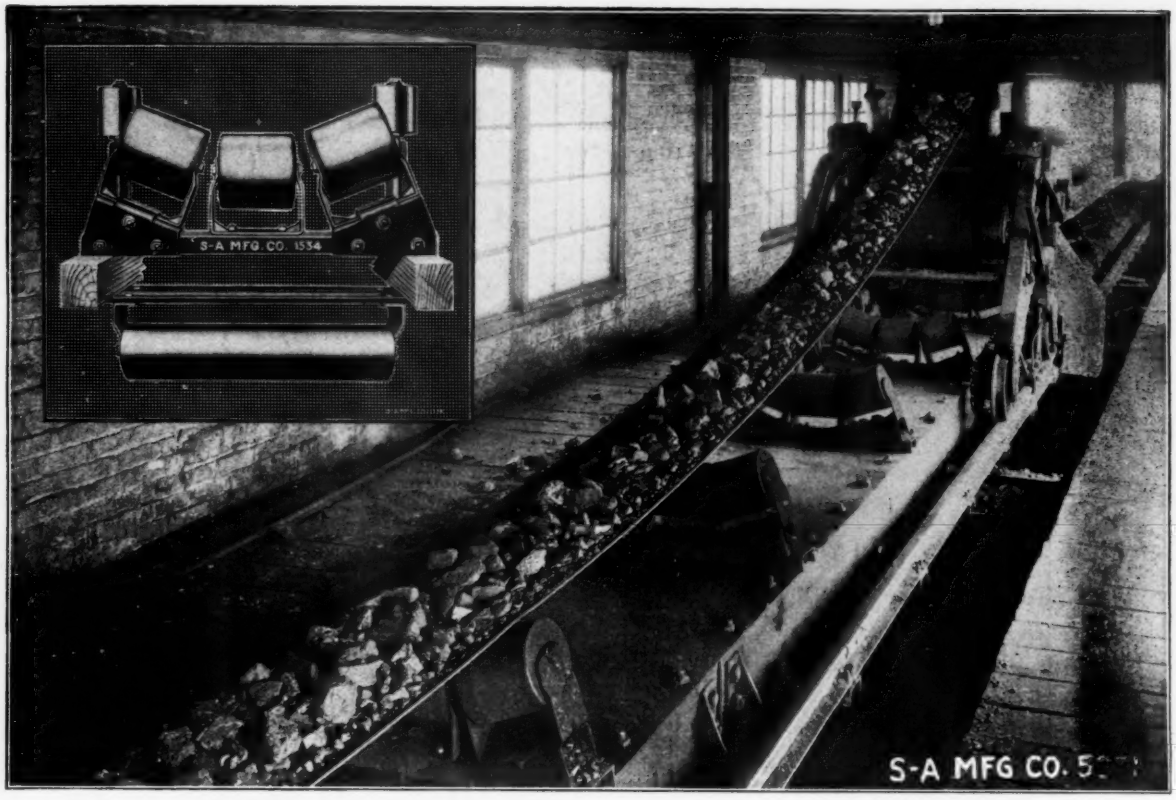

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A GREAT VICTORY FOR LABOR

THE MOST IMPORTANT purpose of government lies in its guarantee to relieve each individual citizen from the necessity of protecting his personal and property rights from invasion. Its courts are organized to define and protect each individual citizen in those rights which are guaranteed to him by the Constitution. The dignity and integrity of the courts of the land and the respect of the public which is commanded by them to a large extent measure the value of that government. Any agency which protects one class of people at the expense of another cannot long maintain public confidence. For many years criticisms have been leveled at the courts because of the use of injunction in restraining employees from interfering with the orderly conduct of business by employers. The courts have assumed to protect the right of property against interference and destruction and so far as possible to enforce the terms of contract. Courts have at all times been open for the protection of the rights of workers, but there are few cases on record in which workers believed that their rights might be so protected, and it will add greatly to the stability of our country when both sides to such controversies stand ready to appeal to the courts whenever in their judgment fundamental rights are being violated. It is gratifying indeed to note that in a recent employment contest in New York City that appeal was made to the courts to restrain employers from the violation of a contract. An injunction was recently granted by the New York Supreme Court restraining the employers from taking concerted action to violate the contract with the International Ladies' Garment Workers' Union, which agreement was to have run until June of this year. Benjamin Schlesinger, president of the union, regards the granting of this injunction as "a great victory for labor in the United States." Justice Robert F. Wagner who issued the order making the injunction permanent had this to say:

"While this application is novel, it is novel only in the respect that for the first time an employees' organization is seeking to restrain their employers' organization from violating a contractual obligation. It is elementary and yet sometimes requires emphasis, that a court of equity is open to employers and employees alike. It is no respecter of persons. It is keen to protect the legal rights of all."

As a sequel Mr. Schlesinger proposes that suit shall be brought by the 5,500 garment workers to recover more than three million dollars representing wages lost to the workers during the time they were on strike in protest against the resolution of the employers in October to enforce the piece-work system and the forty-nine-hour week. It will be a happy day for the world when all controversies which cannot be settled by agreement shall be submitted to courts or boards of arbitration for final adjustment.

STATE TAXATION OF MINES

CERTAIN MINING STATES are imposing a tax burden upon the mining industry which is wholly disproportionate to that imposed upon other taxable resources. In many of the principal mining states revenue requirements for state and local purposes have been more than doubled. The increase in revenue requirements has been due to increased indebtedness and extravagant expenditures.

In one state the average per capita levy for local and school purposes in 77 cities and villages, not located in mining districts, amounted to $31.89 in 1920, while in 17 cities and villages located in the mining districts the average per capita levy for local and school purposes in that year was $164.29. In another state the mines, which constitute a relatively small portion of the taxable property, contributed approximately 50 percent of the taxes raised. Mining corporations reporting taxable income, according to the deductions shown on their federal tax returns, paid in 1918 $50,610,967 in state and local taxes whereas in 1919 they paid approximately $70,000,000, although for the same years the deduction for state and local taxes taken by corporations engaged in agricultural and related industries remained practically stationary, amounting for each year to less than $12,000,000. All of the coal mining states show tremendous increases in taxes which undoubtedly are reflected in the price of coal.

Numerous illustrations can be cited to show that there is a growing tendency in certain states to discriminate against the mines in the enactment and administration of tax laws, the controlling political groups of these states being ignorant, apparently, that such a policy results in the curtailment of mining and forces the exploitation and dissipation of their mineral resources which would provide a continuing source of revenue if properly conserved and developed.

An exhaustive study is being made of the situation by a special tax committee of the American Mining Congress for the purpose of developing and fostering effective corrective measures. Data is now being secured by this committee with the aid of representatives in every mining state and the cooperation of the state tax officials. In order to accomplish the best results the support and cooperation of every branch of the mining industry should be concentrated in a united effort to secure justice. Unity of support, purpose, and action will stem the tide of excessive and discriminatory state taxation, whereas without coordinated effort little can

be accomplished, and misdirected and sporadic attacks against existing conditions may tend to aggravate the situation.

With a nation-wide organization functioning under the leadership of men well known to every branch of the mining industry, the Special Tax Committee is certain to accomplish results that will benefit the whole industry. A proper attitude must be inspired toward the wasting industries on the part of the general public, legislators, and tax officials, who, not being intimately acquainted with the hazards and difficulties of mining, or cognizant of the disastrous trend of the high tax burden upon mines, usually proceed upon the erroneous theory that a large portion of mine production, unlike the production of other industries, should properly belong to the state, whether produced at a profit or not. With such a program to be carried out, every unit of the industry—coal, oil, metals, non-metals, and all others—should give full support and cooperation in making the work of this committee a complete success.

THE FUTURE OF SILVER

BECAUSE of its monetary use in subsidiary coinage and in the Orient, silver of all the metals has responded in the most eccentric way not only to the process of world inflation but also to the deflation which is now taking place. During the war period silver was the last of the metals to rise in price, thus reflecting a delayed appreciation of the importance of this metal as a war necessity. Not until the silver crisis in India arose, was the value of silver as a war requirement fully realized, when England petitioned the United States to release the only available reserve of silver to satisfy the pressing and abnormal requirements of India. Arrangements were made to accommodate Great Britain under the contract included in the Pittman Act, and that nation has expressed its gratitude for the loyal assistance of its ally in an hour of critical need.

Silver could not resist the general increase in prices which accompanied the post-armistice inflation, and in 1920 reached the high price of $1.37 per ounce. While this fact may have been regarded at the time by the producers of silver as a benefit, especially as costs of production were continually increasing, it may prove to be one of the greatest misfortunes that has ever befallen the silver industry. It became impossible for nations to maintain their high grade silver currency in circulation because of the profit that could be made at this price in the conversion of coin into bullion. The demand for subsidiary currency was at that time becoming greater as the volume of paper currency released for circulation became greater. As a result, some nations enacted laws lowering the silver bullion content of their coins to nearly half their previous content, while others adopted the substitution of base metal coinage. This wholesale debasement of silver coinage is an act of inflation which has greatly impaired the monetary use of silver. A computation cannot be based upon the estimate of silver coinage circulations for the reason that some of the coin may have been destroyed, some may have been converted into bullion before the law became enacted, and still another portion may be hoarded.

However, it has been estimated by competent authorities that the reduction of the silver content of the silver currency of Great Britain from .925 to .500 will ultimately release some 40,000,000 ounces of silver bullion. In continental Europe it would be practically impossible to estimate the amount of silver which may be released from the coinages of those countries but from the fact that over 49,000,000 ounces of coin and bullion derived from the melting of coin were sold in the London market during the last two years, it is evident that a great amount of silver has been released. Of the 49,000,000 ounces released by continental Europe in the last two years, 22,000,000 ounces were sold in the London market during 1921. It has been estimated that 6,500,000 ounces were released in 1921 from the demonetization of English silver coinage.

The demand for silver for coinage purposes has considerably fallen off, and will continue to be relatively less on account of this debasement, until such time as these countries may restore the high grade content of their subsidiary coin circulations. It is impossible to conceive that this could take place until such countries have returned to a sounder financial condition, a process which may take many years. The ability of India and China to absorb silver must be measured upon their ability to dispose of their products in the world's market. The purchasing power of Europe will exert an adverse influence upon these countries, with a tendency in the direction to create adverse rather than favorable trade balances for them.

There is, however, one bright spot in the monetary outlook of silver, in that a mint is to be established at Shanghai which will have the effect of stabilizing Chinese money and should remove the variations which now exist in the many silver coins and tokens in circulation in China. With this far reaching demonetization of silver and the apparently lessened demand for silver for coinage purposes, the outlook for silver is most serious. As the industrial demand for silver never will be so great as to be a decisive factor in its production, the future prospect of the silver industry must depend upon creating an increased monetary demand. The remonetization of subsidiary silver coinage being so remote a possibility, it leaves but one alternative for increasing the monetary demand for the metal.

Among the many causes for depreciation in the currencies, particularly of the countries of continental Europe, has been the excessive reduction in their gold reserves, together with the great increase in the circulation of paper money. The gold reserve ratio to the circulating media has become greatly reduced. It has been suggested that silver might be used as a reserve basis for note circulations and thus greatly expedite the restoration of currencies of these countries back to the gold standard par. It is cited that a silver ruble in Russia is worth 10,000 paper rubles, by way of illustrating the superior value of silver as compared to the paper money circulation of that country. This would be true in a lesser degree of the currencies of many other of the European countries where inflation has not been on so great a scale. This proposal does not contemplate establishing a silver coinage ratio and therefore should not be confused with the issue of bi-metallism.

In this suggestion there may be possibilities, and if there are, they probably will be ably presented at the forthcoming international economic conference at Genoa in March. Since the export business of this country is dependent upon an increased purchasing power of European countries in particular, any remedies which may be adopted by the Genoa conference which will result in a more rapid appreciation of the currencies of continental Europe to the gold standard par, should be regarded as constructive, and if they do not violate sound economic and currency law, should meet with our approval.

DEFLATE SWOLLEN PUBLIC DEBTS

EVIDENCE THAT THE mining industry is seriously affected by the growing volume of tax-exempt securities, the tremendous increase in public indebtedness and state expenditures, and the abnormal upward trend of state and local taxes, was submitted by the American Mining Congress tax division to the Committee on Ways and Means of the House of Representatives during the recent hearings on the proposed constitutional amendment providing for the abolishment of tax-free income.

It was shown that excessive taxes force selective mining, which automatically reduces the volume of commercial tonnage and shortens the life of the mines. Thus the tax burden tends to destroy a continuing source of revenue to the state. As an illustration of this condition one state was cited in which the average ton of ore mined in 1917 contained 4.6 ounces of silver, 63.3 pounds of lead, and $0.83 of gold, whereas in 1921 the average ton of ore mined contained 16.3 ounces of silver, 119.4 pounds of lead, and $2.24 of gold, which indicates that what was commercial ore in 1917 in that state is waste today. Similar conditions exist in other mining states.

In protesting against the continued issuance of tax-exempt securities it was urged that the mining states, instead of increasing their indebtedness and their revenue requirements, should adopt a policy of rigid economy in order to conserve their ore reserves from which future revenues may be derived; and that immediate action should be taken to abolish tax-free income so that the basic industries of the country, especially in times of depression, shall not be required to bear any tax burden which rightfully should be spread over wealth now represented in tax-exempt bonds and securities, in addition to that imposed for the purpose of paying interest on such securities and of building up a reserve for their redemption.

CHEAP TRANSPORTATION A FIRST NECESSITY

THE EXPIRATION of the coal wage agreements and the possible situation which may result in the development of a new wage scale will call for much of public discussion during the time before April 1. It is announced by the leaders of the United Mine Workers that no reduction in wage scale will be considered and many even go so far as to insist that an increase of the wage scale will be demanded. It may be well for these leaders to consider what is likely to happen if their demands, either for an advance or for the continuance of the present wage scale, shall obtain. It must be remembered that no matter how high the wage scale which may be agreed upon that it will be of little avail unless it shall provide employment at that scale.

The coal production for the last year and at the present time is in excess of consumption and there is little probability that coal production will be largely increased until industry has increased its activities.

Cheap transportation is the basic requirement. No commodity is of any value until it is moved from the place of its origin. The large earnings of the railroads are mainly based upon the increased demand by the people for the materials created at points distant from the place of consumption. Too high transportation rates have frequently forced the consumers of the East to go without the farm products of the West, while these products were wasted in the western fields. It is not a healthy condition when the people of New York are required to pay 10 cents each for apples while in orchards of the northwest apples are rotting on the ground because orchardists cannot secure enough for them to meet the cost of harvesting.

Cheap coal and cheap railroad labor are essential to cheap transportation. Cheap coal to the railroads necessitates lower wages to the miners of coal. Railroad wages and labor wages must be reduced to a point where the apples of Oregon can reach the markets of the East leaving a fair return to the producer and deliver the goods at a price which the consumer can afford to pay. When the cost of transportation is not somewhere near the level of the ability of the consumer to pay, either that cost must go down or the consumer's earnings must be increased. Labor unions must not stand in their own light by an attempt to break down the law of supply and demand which will in the end control the price of service. If the price is too high, there will be no service called for and no wages paid.

In a country with vast and varied resources all wage scales and all earning power will in the end drift toward a comparative level.

Coal wages and railroad wages cannot remain at too high a level without stifling the industries upon which they depend.

TAX EXEMPT BONDS

THE COLLECTIVE INTELLIGENCE of a people is below the standard in business sense of the successful business men of the country. A good business man does not borrow money because he finds it easy to borrow, but because of a reasonable certainty that a profit can be made by its use, and, under usual circumstances, he never borrows for the purpose of purchasing luxuries. Community intelligence is prone to borrow because it is easy and quite ready to acquire necessary luxuries with the proceeds of community indebtedness. This tendency is sufficiently strong to accomplish all proper public improvements. The additional incentive of tax-free bonds will surely lead to gross extravagance in public expenditures and place undue financial burdens upon municipalties in the future. Capital will naturally seek the haven of tax free investment rather than the more harassing field of business venture in which profits if gained, are liable to heavy tax by the government. Tax exempt securities, therefore, first, limit the fund available for constructive business enterprises; second, force business to bear too large a part of the burden of public expense; and third, induce extravagance in public expenditures.

It will be well for the nation if all profits are made to bear their proportionate share of the public burden and that every inducement to investment in non-profit enterprises and the creation of tax-free securities shall be quickly abrogated.

THE CHICAGO LABOR SITUATION

SEVERAL MONTHS AGO an agreement was entered into by the Chicago building trades and the employers to arbitrate the wage scale and labor conditions before Judge Kenesaw M. Landis of the federal court. After careful investigation of all of the issues involved, Judge Landis rendered a decision reducing slightly the wage scale and condemning some of the abuses which had developed in the building trades. While the decision was satisfactory to neither side of the controversy, it was hailed as a fair solution of the general problems and both the employers and the officials of the labor union accepted the conclusions of Judge

Landis. Some of the crafts associated with the Building Trades Council accepted the decision and returned to work. The more radical craftsmen refused to abide by the decision and an internal fight was begun against Thomas Kearney, president of the Building Trades Council, which resulted in his being deposed and the election in his stead of William Curran, one of the leaders among the radicals who refused to accept the award given by Judge Landis. In the meantime, non-union men were employed in the construction work where union men had refused to serve. With the election of Curran came the declaration from the radical leaders that "the fight is on," and strikes were called on a number of large construction jobs where non-union men were employed and a crowd of business agents and labor leaders in automobiles undertook to drive the non-union men from the jobs on which they were employed. A strong campaign has been launched to stampede those crafts still employed to join with the strikers and it is expected that $100,000,000 worth of construction work in Chicago will be halted. In the meantime, the citizens' committee has been organized for the purpose of enforcing the Landis award. The Chicago situation will be watched with great interest by those who believe that labor organizations should be held responsible for their contracts and that until they are willing to accept responsibility for all legal obligations that they are not entitled to public confidence, respect, or support.

AMERICAN VALUATION

IT HAS BECOME INCREASINGLY apparent to us during our investigation of tariff matters that the whole mining industry is dependent for its prosperity on adequate protective tariff. Cutlery made in Germany is not made from American steel; mercurial preparations made abroad are not made from American quicksilver; electric storage batteries manufactured in Japan are not made from American lead, and none of these things are made in factories which burn American coal. Yet, if we are to produce these articles within the United States they must have an adequate protection.

These tariffs are all levied on an ad valorem basis. In the face of present chaotic conditions abroad these duties can only be levied equitably as between countries of origin on a basis of American valuation. The principle of American valuation is the only principle which will adequately protect manufacturers when the competing article is dutiable on an ad valorem basis. Therefore, the American Mining Congress passed the following resolution at its annual convention in Chicago on October 22:

> *Whereas*, in order to provide tariff duties which shall adequately protect the industries to which the mining industry furnishes its products as basic materials, a method of valuation must be established which will prevent the dumping of undervalued products in times of industrial depression,
>
> *Be it resolved*, That the American Mining Congress endorses the broad principle of American valuation, and leaves to the wisdom of the congressional committees the determination of the administrative methods necessary for its proper application.

This resolution was passed because we realized that we could not sell our lead, our zinc, and our coal to factories with idle smokestacks.

THE FALLACY OF INCREASING WAGES

UNION MINERS, working only a few days each week during these depressed times in the industry, find their incomes at a very low level. Immediately they reason that they must secure more money and decide upon an increase of the wage scales as the means toward the end.

They fail to admit the fact that the present wage scales are largely responsible for industrial inactivity throughout the country, with large consumers unable to pay present coal prices and hold their production costs low enough to operate profitably. They do not appear to realize that their present situation is the penalty imposed for disobedience of the law of supply and demand.

If the supply is offered at a price not justified by the demand, the price must be lowered, else those financially dependent upon replacing the supply through production will have little at which to lay their hands. If the price is held at an unwarranted level by wages paid producers, there can be only one solution—cut the wages.

In the final analysis, an increase of the wage scale would work a hardship upon the union miners by placing a further handicap upon the return of normal industrial conditions. Increased prosperity for the miners is dependent upon increased consumption of coal.

If the wage scales were to be so revised that a miner would receive $100 for each ton of coal he mined he would still be without a job, for no coal would be taken out of the ground.

A copy of increased wage scales will not purchase the necessities of life when presented to the butcher.

For the mutual good of the miners, the industry, and the public, there is only one action to be taken. The wage scales must be reduced if an economic chaos, demanding nothing short of radical remedies in the future, is to be prevented from heaping its resulting troubles upon all concerned.

TAX DIVISION'S SUGGESTIONS ADOPTED IN NEW FORMS

THE PERSONAL INCOME tax return forms adopted by the Bureau of Internal Revenue for collection of the 1922 tax shows vast improvement over previous forms in the matter of conciseness and general simplification. The new forms follow almost identically the suggestions made by the Tax Division of the American Mining Congress, which appeared in the October, 1921, issue of the MINING CONGRESS JOURNAL, and which were brought to the attention of the Tax Simplification Board at its first meeting.

Instead of an intricate and involved method of computation, requiring complicated schedules, the new forms concentrate the information into two general classifications for income and deductions, from which taxable net income is determined and the tax is computed. The supplementary schedules are greatly simplified and are used merely for explanatory purposes and are not involved in actual computation by the individual of his tax as in the old forms.

REVISION OF THE MINING LAWS

WIDESPREAD CRITICISM throughout the mining industry directed against provisions of legislation before Congress proposing revision of the mining laws will preclude any chances of the pending bill surviving committee action in its present form. Should provisions of the bill be found which are favored generally by the industry, they will be incorporated either in an entirely new substitute measure or a radical revision of the bill now awaiting consideration by the House Committee on Mines and Mining.

It is to be regretted that so few have expressed their attitude, but when the committee turns its attention to the revision bill, it will find placed at its disposal complete tabulations of these expressions of opinion, indicating that over 70 percent of those who have expressed their views believe that no necessity exists for material changes in the present Federal mining laws. Certain individual revision proposals show themselves as objects of such overwhelming opposition that no possibility exists for their enactment into law.

Reflections of the opinion held by the mining industry concerning the proposed revisions have been secured in Washington through use of questionnaires and interrogating correspondence generally, both by Representative Samuel S. Arentz, member of the House Committee on Mines and Mining, and a mining engineer of long experience, and by the American Mining Congress.

Mr. Arentz has received large numbers of memorials, resolutions, and letters from associations and individuals interested in the bill, and the Bureau of Mines also possesses scores of similar manifestations. All these communications were considered in detail at a recent meeting attended by Mr. Arentz and representatives of the Bureau of Mines, the Geological Survey, and the General Land Office. The results obtained by this conference were then supplemented by returns secured from the questionnaire circulated broadcast throughout the industry by the American Mining Congress, the whole to form the presentation to be placed before the House Committee on Mines and Mining when it turns to consideration of the bill.

It is certain that publicity given the measure's introduction has achieved the desired result, namely, to secure a reflection of popular opinion concerning the merits of the proposed revisions before they were started on their advance through legislative channels.

A majority opinion is registered against abolition of extralateral rights proposed by the new measure, which would permit all previous locations to retain their extralateral rights, giving them, in addition, all the minerals included within their vertical planes that are not covered by any existing extralateral rights. A two-to-one majority is shown over advocates of the change in answers from California and Colorado, which states report the largest number of protests. New Mexico and Utah showed a slightly larger element of favor for the revision. All other states carry out the general trend of the opposition.

Heavy fire is drawn by the bill's proposal to make necessary the laying out of mining claims along lines which must coincide with the lines of the public survey. It is pointed out that the length of time which has elapsed since the surveys were made, giving rise to illegibility of survey markings and a number of other negative factors, makes it impossible, in many cases, to lay out the claims in conformance with the public surveys. To cap the situation, say the critics, the old surveyors are incorrect in many instances. It is also stated, in many of the letters, that necessity of making an accurate survey in order to meet the terms of the proposed revision would involve expense which individual prospectors, working on grubstakes in many instances, would not be able to bear.

Provisions of the proposed law relating to requirement of discovery were objected to in 65 percent of the the answers. California, Colorado, New Mexico, and Utah led in opposition to this change. The pending legislation would provide that a claim may be held for five years without discovery, and that it might be held for a further period, not exceeding five years, by payment of $50 per acre annually in advance. This, coupled with the substitution of cash payment for annual assessment work, some critics say, would enable large companies with extensive finances to acquire claims and hold them indefinitely without development work. This condition, it is said, would operate to discourage activities of individual prospectors who depend upon development work for discoveries.

Commenting in this connection, Mr. Arentz declares that in his long experience in the mining industry he never has seen a mine, or any mining property, that is deserving of a valuation being placed upon it that cannot be traced in its discovery to the earnestly prosecuted efforts of a prospector on actual development work. This view is shared by one authority who, in answer to the questionnaire, says that "to enact into law the provisions governing development and assessment work would be to sound the death knell of prospecting in remote districts. It would eliminate embarkation upon long chance projects, a factor that has resulted in the mining industry occupying the high plane of development which it holds."

The bulk of opinion is cast against the proposal to make payment of money permissible in lieu of actual assessment work on mining claims.

The proposal that all claims must be recorded in the local office is also made the mark of criticism. Prospectors declare that the land offices are so distant from the claim sites in many instances that an element of uncertainty is injected into the situation. They emphasize the view that an entangling of claims is not likely to arise under the present system of registration with local authorities, stating that much trouble would be inspired were administration to be placed in the hands of those unfamiliar with local conditions.

"In introducing the mining law revision bill," says Mr. Arentz, "I simply aimed at placing it on the rolls of pending legislation in order that it might be given the widest publicity and that it might inspire an indication on a corresponding scale of the manner in which the industry would react to such a measure.

"It was not intended that the measure should be urged for Congressional action in its present form, but merely that time and efforts of the future might be saved by getting the bill whipped into shape before it began its course through legislative channels.

"Although the bill represents the long, earnest, and highly capable work of the committee of engineers that drafted it, it has only been reasonable to subject it for a time to an open forum to permit a determination of the attitude held by all who would be affected by enactment of its proposals, for, if the mining industry does not want to conform to the committee's judgment, Congress will surely not pass any bill in opposition to the popular wish."

SPECIAL COMMITTEE BEGINS STUDY OF STATE TAX SYSTEMS

OWNERS OF MINES and mineral properties have encountered, during recent years, a multiplicity of difficulties in meeting the rapidly growing tax burden and the intricate complexities of the revenue laws. Realizing the serious effects of these difficulties, the American Mining Congress has made a continuous study of revenue legislation, and has maintained an effective organization for the purpose of alleviating the situation, through which all branches of the wasting industries have been benefited in the development of sound policies and constructive changes in the law and administrative procedure.

Having rendered an invaluable service to the whole mining industry in matters of Federal taxation, the national organization has now turned its attention to the tax laws and administrative methods of each of the mining states.

A resolution was passed at the last annual convention in October, 1921, authorizing the creation of a special tax committee to study the question of state taxation of mines within the several mining states. This committee has been organized with state units comprising one or more members in every state and a central unit comprising well-known mining engineers, accountants, economists, and writers who are authorities on the subject of mine taxation, both state and Federal, and this committee already has begun to function. Each state unit will furnish full information concerning the state tax laws, policies of administration, rates of taxation, methods of mine valuation, effects of the tax system, indebtedness of the state and its subdivisions, revenue requirements, total amount raised by taxes, total amount paid by owners of mines and mineral properties, and other data which may have an important bearing on the tax situation, together with a report on the effects resulting therefrom. The central unit will formulate a general report based on the reports and data submitted by the state units, and it is planned to make this report a work of lasting value to the mining industry, both as a guide to taxpayers and as a reference manual for the guidance of legislatures in the framing of new legislation and of state tax authorities in the administration of tax laws affecting mines.

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Every branch of the mining industry is represented on this special tax committee and every phase of the subject of mine taxation by the various states will be discussed in its report. It is tentatively proposed to show in detail the various systems of taxation, methods of valuation and assessment, lack of uniformity in rates, and relation of production costs, as affected by state and local taxes of the different mining states. The extent to which increased taxes are or may be reflected in market prices of different mine products also will be indicated.

Systems of mine taxation in the different states are not uniform, and one of the objects of the investigation is to determine to what extent, if any, uniform legislation would be practicable. Methods of valuation and assessment differ widely, both as between the states and as between different classes of property. Rates of taxation in certain states are comparatively high, while in others they are relatively low. Some branches of mining are able to add the increased tax burden to their selling prices; but others are forced to sell at a price fixed by market conditions which makes it impossible to pass on to the consumer any increase in production costs. The special tax committee has for its aim the establishment of a scientific and equitable basis for mine taxation, sufficiently flexible for application to varying local conditions and adaptation to local needs.

In many of the states where taxes have been increased, the wasting industries have been selected as the taxable resources which should bear the added burden. As a result the burden imposed upon the mining industry is much higher proportionately than that imposed upon other classes of property. Since 1913 the revenue requirements for state purposes alone of Arizona, Colorado, Missouri, Montana, Nevada, Oklahoma, and South Dakota have been practically doubled, while the needs of Arkansas, Kentucky, Michigan, Minnesota, New Mexico, North Dakota, Pennsylvania, South Carolina, Tennessee, Texas, Utah, West Virginia, and Wyoming have been increased by more than 50 percent. Increases in other states range from 15 to 50 percent.

The gross indebtedness of mining states has been constantly growing notwithstanding the imperative need for economy in expenditures and for a conservative policy with respect to public indebtedness while the national war debt is being amortized and business and industry generally is passing through a period of stagnation and depression. Not only have these states increased their fixed or funded indebtedness, represented by bonds or certificates upon which interest must be paid and for which sinking funds must be provided, but their floating indebtedness, evidenced by revenue bonds, short-term bonds, warrants, accounts payable, judgments, public trust funds, and the like, has been noticeably increased. This situation must be corrected by educational measures effectively demonstrating the ultimate results which must inevitably accrue, among which are the diversion of capital from the states where these conditions prevail and the loss of large tonnages of low-grade ores, due to high taxation which forces selective mining of only the rich ores which can be produced at a profit.

ADVANTAGES OF STANDARDIZATION

By C. E. Watts*

DURING RECENT YEARS, Science and Wisdom have unfolded to the world wondrous facts, and by diligent exploitation of humble things in Nature's realm have elevated mankind to a comparatively advanced position of usefulness, thereby giving to the world such advantages in both civic and commercial enterprises as to cause the thinking mind to frequently ponder regarding the possibility of further advancement towards the goal of perfection.

We have been, during the last decade, and for that matter we still are living in, a period largely dominated by Mechanical and Chemical Science, a period during which phenomenal advancement in constructive genius and the power to bring usefulness out of natural resources has broadened and ripened, through constantly increasing knowledge, to a degree that can easily surpass the most vivid imagination; so that today the achievements that once appealed to us as bordering upon the realm of supernatural, are accepted with an assured confidence and not an overdemonstration of surprise.

During this brief period a great variety of new industrials have grown into existence; the possibilities of numerous and heretofore little known natural resources have been partly unfolded to us; transportation systems, both of land and water, have surpassed belief in their achievements; these accomplishments all having their root of growth into being based upon the power of knowledge and wisdom vested in man, and through the persistent application of his mental and physical force, still further advancement may reasonably be expected.

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Should diligent inquiry be made as to what basic principles common to the conception of any one of these various enterprises, and upon which its physical development were founded, perseverance, application, and system would certainly be included among the answers forthcoming.

Perseverance and application are inherent characteristics of the normal human. These traits are born with him, and his recognition and use of them are instinctive. System, however, is a thing man-made, supremely essential to the successful existence of any man-made enterprise. It is an old and an extremely simple principle. Of late years, perhaps, it has been the subject of more extensive literary effort than previously noted, and it is a subject, also, that appears never to have been completely expounded to the point of exhaustion. In fact, about the first feature which established itself in any practical field of endeavor is this simple principle of "System." It enters into and is considered the first essential necessity to the successful progress of any and all enterprises, whether of a manufacturing, constructive, or operative nature.

"System" has been studied, cross-examined as to its form and mode of application, and used to advantage for the attainment of efficiency in connection with every form of endeavor.

So important is this factor and so vital its influence that exhaustive analysis of its uses and results continually receive the consideration of those in position to advise and direct the destinies of present-day enterprises.

During the natural growth and expansion of modern enterprises, guided by the trained minds of professional managers and engineers, who are continually exerting their efforts to secure improvement in the realm of efficiency in accomplishment of things, there is a common evidence of a tendency in the direction of the adoption of another man-made principle also applicable with limits as now understood, to many enterprises.

This more recent principle probably has its origin in the fact that "Necessity being the mother of Invention" and the "Knowledge which comes from Experience" has crystallized itself into a form which may be expressed by the term "Standardization."

This factor, perhaps, at least at the present time, may be considered as having a somewhat more limited field of application than this older factor, "System," previously discussed. It is nevertheless a subject which has for some time past received much thought, considerable discussion, and limited adoption in the field of industrials, by a number of the leading engineering bodies of this and other countries. Very recently has received a marked impetus by virtue of an awakened interest and energetic campaign started in its behalf by the American Mining Congress, which body has, in times past, successfully sponsored other subjects most valuable to the advancement and welfare of matters pertaining to the country's best interests.

Therefore, as an arm of the American Mining Congress, the second National Standardization Congress was held in conjunction with the Twenty-fourth Annual Convention of the American Mining Congress at Chicago, Ill., October 17 to 22, 1921, and a very comprehensive review of this organization, its committees and their functioning, as set down in the report of the chairman in the November, 1921, issue of the Mining Congress Journal, should substantiate the fact that Standardization is today a live subject; one which has come to stay, and from which great advantages to the mining industry and to those industrials interested in mining equipment may accrue.

This standardization body now being so organized

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that it is in a position to actually accomplish the creation of National Standards as pertaining to mines and mining equipment and with the belief that at this particular time the consideration of "standards" applicable to mining equipment as supplied by manufacturing and industrial organizations throughout the country can with advantage be presented, and outlining some of the experiences which the writer has met with and discussed in the work upon the subject "Underground Transportation," may in some measure prove beneficial to the cause in general.

From the standpoint of the mine operator or superintendent the item of underground transportation occupies a most prominent position and should be given thorough consideration as to ultimate length, direction, and probable general grade of the lines constituting such system before opening developments of a mine property are started, because other features connected with mining, such as drainage, ventilation, mining at the face, etc., while having their effect upon the efficiency with which production can be obtained, are more susceptible of modification if necessity requires than is transportation, for all coal must be transported from the mine face to the point where it is loaded into cars or other equipment for transportation to market, and this feature must continue practically unalterable throughout the entire life of the mine.

Drainage may be arranged as developments proceed so that its cost may decrease as the mine advances. Likewise changes may be made with respect to ventilating so that the cost of this item may be controlled within prescribed limits; but as a mine is developed and coal extracted from year to year the working faces of the mine continue to recede further and further away from the point of delivery for shipment. These increasing distances carry with them proportional increase in cost of road equipment and heading maintenance, rolling stock, motive power, and attachments. Nor should the fact be overlooked that an appreciable amount of dead tonnage in the form of rock, refuse, and supplies must also be transported. As the cost of transportation increases relief is naturally a subject for consideration and is, in some instances, held in partial abeyance in conjunction with other arrangements by the use of larger cars and hauling heavier trips.

About this time the superintendent wishes he had heavier rails, a wider gauge, a longer curvature at switches, etc., so that it might be possible to use longer wheelbases on the rolling stock, or that the grades were a little less severe, which items would permit the use of a car of maximum capacity. In fact, if he had this proposition to do over again, his cars would have originally had axles on them which would permit the use of a heavier wheel with more bearing surface in the hub and grease would stay in better than oil, and all the bumpers would have been uniform in height and curvature so that the cars would stay on the tracks around curves better; and besides the previous superintendent that handled the mine purchased cars from a different company, made car strap irons somewhat narrower and thicker than the first lot of cars. Also those strap irons would only take a $\frac{5}{8}$ bolt while the irons for the first lot of cars required $\frac{3}{4}$ and $\frac{7}{8}$ bolts in some places; and again, the shape of the car irons on the first and second lot of cars were slightly dissimilar, so that when a good-sized wreck occurred in the mines and a lot of cars went to the shop for repairs it took about four different sizes of bolts and nuts, two different car iron reformers, extra time for the carpenters to ream out holes through strap irons and wooden sides because they were all out of $\frac{5}{8}$ bolts and must use $\frac{3}{4}$ ones, with the results that the repairs required longer time, and cost about 50 percent more to repair than it should have. Also, he decided that in order to haul a heavier trip it would be necessary to double-head his locomotives in order to negotiate a couple of sharp grades about two miles down the main heading, as the regular 25-ton locomotive could only handle 45 cars alone and he must have more cars per trip than 45 in order to clear out the tonnage mined in that section served by the 25-ton outfit. Come to figure it out, the only available locomotive to double-head with the 25-ton one is a 13-tonner. He puts it in service and increases the trip to 70 cars. It costs just as much for a motorman to operate that 13-ton outfit as it would another 25-ton outfit. The section is producing enough coal to require a 90-ton trip, so that it is necessary to move some of the miners from this section to another section, where they are really unable to produce quite as much tonnage as they had previously because their places are wet, as this section had not been quite completed as to drainage. Anyway, the other superintendent never should have purchased a 13-ton locomotive—the motor-boss suggested it should be 25 tons when the purchase was made.

These, and about as many more reasons, continually confront the mine superintendent to detract from the best efficiency possible in transportation and its costs.

Again, let the subject of underground transportation be given consideration from the manufacturers' standpoint.

Here the manufacturerer of frogs and switches receives in one month orders from a dozen different coal mine operators in half as many localities and states, calling for No. 4 frogs, hardly any two of them asking for the same weight of rail or length of switch-points. The manufacturer, knowing that orders embracing widely varying details of a No. 4 frog will be received, finds it impossible to carry at all times in stock material necessary to meet such varying needs, neither can he with certainty make up any considerable amount of finished product to carry in stock, the orders having to be made up after receipt, and possibly having to wait until shipment of stock necessary for completion of order is secured from the mills.

Similarly the mine car manufacturer receives a goodly number of orders for mine cars from different operators scattered over the country. Here is a situation considered from the standpoint of efficiency, if possible, beyond reason. These orders may cover gauges ranging from 18 inches up to standard railroad gauge, varying by inches and even half inches. Wheels of three or four different diameters and tread shapes; axles for plain and roller bearings of different lengths for the same diameter wheel; scarcely any two car trucks alike in many, and none in all, details as to general dimensions, wheelbases, etc.; some car bodies wide and flat, others high and narrow, most of them with more overhang than will represent very long life of car if it is required to handle much rock; some supplied with brakes, others without brakes; a promiscuous assortment in sizes and weights of strap irons, length and size of body and bottom bolts, swinging and tight end-gates; some bodies all steel, some all wood, others a combination of the two.

It would, of course, be out of the question to standardize in detail many of the parts and pieces constituting a complete mine car, owing to the varied conditions and purposes for which they are required; but without question there are a great many general features which could be so arranged that it would permit the manufacturer to carry less stock and make quicker and cheaper delivery without in many manner detract-

ing from competitive features or inflicting a hardship or disadvantage of any kind upon the manufacturer or operator.

What has been said regarding mine cars applies equally as well to the manufacturers of electric locomotives, in so far as track gauges, wheel treads and diameters, bumper shapes and curvatures, wheelbases and weights of the units, as a whole, are concerned.

In general, it may be stated that the subject of Standardization for Underground Transportation embraces such a wide and fertile field for economics to both operator and manufacturer that it is beyond the immediate comprehension of any single person or single group of engineers to consider in any short space of time even the broader and more general features of the subject.

It is interesting to know, however, that the two years in which the writer has been interested in this subject and during which period contact has been made with a fairly representative personnel of both operators and manufacturers throughout the principal centers of mining and manufacturing activities of the country, that all have expressed themselves as in accord with the idea of standardization along these lines, and I here wish to express my thanks to the many who have given of their time and efforts towards the actual unscrambling of the present extremely confusing and inefficient situation as regards equipment which at present prevails in underground transportation systems in the majority of coal mines.

EQUIPMENT DISPLAY A FACTOR OF PROGRESS

THE CONTINUED MAINTENANCE and development of the great American mining industry is largely dependent upon the securing of greater production at relatively lower cost and the manufacturer of mine equipment and mine machinery has had and will have a vital and integral part in the continued development of American mining. As a matter of fact, it has been the inventive genius of the manufacturing industry, which, in a large measure has made possible the introduction of labor-saving machinery and the continued development of large scale production in mining enterprises in the face of increased material and labor costs.

Today, confronted by the present competitive conditions, the fullest utilization of every type of effective mine equipment and mine machinery is essential, and, appreciating the importance of these facts, the American Mining Congress is arranging to make a special feature of the exposition of mines and mine equipment, which will be held in conjunction with the twenty-fifth anniversary convention to be held in Cleveland, Ohio, October 9 to 14. In the development of this exposition the American Mining Congress seeks to assist both the mine operator and manufacturer by creating a medium by which the mine operator can study and compare the latest forms of mine machinery and through which the manufacturer can develop those contacts with potential buyers so necessary for the continuance of business developments.

From the standpoint of the manufacturer this great industrial exposition furnishes an effective and relatively economical method of national advertising and in addition it gives the opportunity of direct contacts for sales. The power of advertising as a selling force is universally recognized. It is an essential factor in any sales campaign. The object of all advertising is to so visualize the merits of a product as to create a demand for the product in the minds of the customers and the most effective advertising is that which with the least expense carries to the largest number of potential buyers the most complete picture of the product which is being sold.

Mine equipment and mine machinery are essentially operating units. Descriptive paragraphs or artistic illustrations can only create a partial impression. To be fully appreciated, such equipment and machinery must be seen and studied while operating by the practical men who are to make use of them.

The American Mining Congress Exposition of Mines and Mine Equipment furnishes the manufacturer, therefore, with the opportunity of showing his equipment and machinery to a representative body of potential buyers—the mine managers, the superintendents and other operating officials, to whom such equipment and machinery is of vital interest and practical value, and the success of these expositions has been due to the fact that they fill a definite business need and create an effective medium for national advertising and for sales contacts.

In addition to their value from the standpoint of the manufacturer, these expositions are also of a great educational value in connection with the mining industry. They focus the attention of the public upon the importance of mining and they furnish an opportunity for great mining states or districts to present effective displays indicating the wealth of mineral resources and the opportunities which exist for continued mining development.

The value of such exhibits from an educational standpoint is indicated by the results obtained at Chicago, where there were twelve important public exhibits, including interesting displays from Alaska, California, Colorado, Utah, the Lake Superior mining district and the exhibits made by the United States Government through the Bureau of Mines and the Geological Survey. Practically all of the representatives in charge of these exhibits at Chicago filed reports with their governing bodies recommending that similar exhibits be made at the succeeding exposition and in the case of Alaska this recommendation will be accompanied by a request that the Alaskan exhibits shall be greatly enlarged and amplified. In other words, these expositions create an opportunity for interesting the general public in the mining industry and in the potential resources and opportunities which are afforded in the great mining states and territories for further development.

As a result of the success of last year's exposition at Chicago and in view of the exceptional facilities which are afforded in the Public Hall at Cleveland for the staging of a remarkable industrial exposition, it is believed and hoped that this year's exposition of mines and mine equipment of the American Mining Congress will be larger, more significant and more comprehensive than any previous exposition of this character ever held in the United States, and from the indications which have already been received it is evident that there will be a very material increase in the number of industrial exhibitors displaying different forms of mine equipment and mine machinery at this meeting.

MINERAL TARIFFS AND MINING MEN

THE MINING and Metallurgical Society of America, through its New York chapter, has been engaged for some months in the drafting of a committee report to be submitted to the whole Society on the subject of mineral reserves as related to the tariff question. Officers and members of The American Mining Congress have been frequent guests at the monthly meetings of this Society at which this question has been discussed.

At the dinner and meeting at the Harvard Club November 16, Chief of the Tariff Division of The American Mining Congress Herbert Wilson Smith was called upon for a short statement. The statement made at that time was general, as was the entire discussion.

When the following dinner and meeting was held at the Harvard Club, December 14, there were present as guests of the Society the Secretary of The American Mining Congress, James F. Callbreath, Charles W. Potts, Nelson Franklin, and Herbert Wilson Smith. A detailed discussion of the proposed committee report, then before those present at the meeting, was engaged in, in which a great deal of diversity of opinion was voiced, the diversity being rather marked as between the actual mining operators and those interested in the engineering and geological problems of mining. The following are excerpts from the statement made at that time by Herbert Wilson Smith, when called upon by C. M. Weld, Secretary of the Society and chairman of the meeting.

BLINDING US TO FACTS

** * * Today there is owned in Europe enough bonds and similar forms of indebtedness, national, industrial, municipal, state, of South American countries to entirely pay the European indebtedness to the United States. Does Europe intend to pay us her indebtedness in that manner? Assuredly not. She wishes to continue to finance South America, to continue to hold South American trade, and in this she is justified. That is good horse sense; but for the international bankers to tell us in the same breath that Europe cannot pay her debts to the United States unless she can have free trade and then to tell us that we cannot develop our own foreign markets unless we have free trade is surely blinding us to a set of facts with which the bankers, themselves, must be most familiar. * * **

At the beginning of every discussion there must be an agreement. In the tariff question, which has been so thoroughly discussed this evening and which I am about to take up further, we must, if you please, arrive at the agreed basis of our disagreement. Each year our own organization, The American Mining Congress, holds its annual convention. At these conventions we discuss these very pertinent subjects and pass resolutions and go home feeling we have accomplished a great deal.

Your own organization has been holding this series of monthly meetings. You have been discussing these same questions. You are considering the report of a committee covering these same questions. The report of this committee is almost diametrically opposed to the sentiment expressed by the resolutions adopted by The American Mining Congress. You will in turn go home as we have done feeling that you have accomplished a great deal, and yet our two accomplishments, if weighed one against the other, would nullify each other. What is the answer and what is the basis for this situation?

Let us take as the first basis for this discussion the agreement that each organization has equally at heart—the ultimate best good of the mining industry—and that, in meeting this question of a tariff on metals and minerals at a time of world-wide economic crisis, we have in arriving at our conclusions been actuated by an equal sincerity of purpose and worthiness of method.

To illustrate this let me quote from the printed report of the tentative report of the committee on page 203, which reads:

"We would favor protection on domestic minerals known to exist in large quantities and capable of efficient utilization, but handicapped in their competition with foreign supplies by trade and technical customs. In these cases there should be careful consideration of possibilities of adapting our extensive low-grade reserves to our needs, with a view of finding whether feasible and efficient processes for their use may not be developed without excessive cost. If so, some measure of protection would be reasonable. For instance, there are very extensive deposits of flake graphite in the United States, many of which are handicapped by a fineness of texture which is said to make them undesirable for one of their principal uses, the manufacture of crucibles. War experience indicated that the American grades could be used to a larger extent than had before been anticipated; but with the resumption of peace conditions, foreign supplies have again dominated the market. Without committing ourselves definitely for or against a tariff, we suggest that a case of this kind affords a reasonable field for investigation as to the possible application of a tariff."

Let me compare to that the platform of The American Mining Congress on the question of tariffs on the products of mineral industry. When the products of a mineral industry within the United States, whose reserves are known to exist in an amount sufficient to supply a proportionate part of the consumption within the United States, come into competition with similar products imported from abroad produced by labor at a wage scale below that paid to American labor, when such competing foreign material can be sold at points of consumption in the United States below the possible production price of the American material and when the continued production of the mineral is a necessary part of our national economic life, there should be levied against the imported material as a protective tariff a sufficient amount of duty to equalize the labor cost here and the labor cost abroad, in order that these American mineral industries may continue to employ American labor. What, gentlemen, is the basic difference between those two enunciations of principles? None, in fact.

In serving as chief of the Division of Mineral Tariffs of the American Mining Congress for the last three years, my work has been in almost direct opposition to every sentiment I have heard expressed here this evening. I have neither apology nor explanation to make for my efforts and there is one point I should like to clear up in the minds of the committee and in the minds of the members present. Frequent reference has been made to political efforts to get tariff legislation in behalf of certain minerals and I wish to forever disabuse the mind of each one of you of the impression that the work for a protective tariff on mineral industries has been in any way in the nature of a political log rolling effort. The presentations which have been made to the committee have been made in every instance on a basis of scientifically compiled data prepared for the use and convenience of the committee in arriving at its own decisions.

Realizing at the outset of the hearings on the proposed tariff revision that the members of Congress could not be expected to read and digest all the materials submitted to them, the data which we were assembling were gathered into the form of a chart which I here show you. The vertical classifications cover all of the mineral industries on which tariff is being considered in alphabetical order from antimony to zinc. The horizontal classifications cover the following basic facts with regard to each of these industries:

Present tariff classification: Schedule, paragraph, rate, unit of measure.

Imports from foreign countries: prewar, war time, present (latest available data).

Imported from: labor cost per diem respectively in those countries, relative trade balances of those countries with the United States, present exchange rates of those countries with the United States.

Nature and extent of ore deposits: foreign, United States. Cost of production: foreign, United States. Prevailing prices: prewar, war time, present (latest available data).

Annual production in United States: prewar, war time, present (latest available data).

States in which produced: number of people dependent on this industry for support, approximate investment, present condition in this industry and particular problem it is facing.

Probable relative percentage of mineral that will be consumed under correct tariff: foreign, United States.

Tariff requested to protect industry.

Tariff proposed in H. R. 7456, schedule, paragraph, rate of duty.

Other charts were prepared for the use of the committee. Principally these charts covering the range of price fluctuations, production fluctuations and cost fluctuations of products manufactured from these basic materials. These charts cover ten unprotected mineral industries over a period of twelve years and an equal number of protected mineral industries over the same period.

These two charts represent relative movements of price and production in two groups of mineral industries, protected and unprotected, and prices of finished products from these raw materials. These charts are composites of price and production movements, the ratios being computed in units of price, production, quantity, and time peculiar to each industry in question, the ratios for the same period then being co-related.

You will note that as price falls, production falls with it until at the low point of the price there is a flat level of theoretical non-production, which in some industries is actual non-production and in others is a minimum of production. When this flat level of low production is continued for a long enough time, price immediately starts upward. Production is stimulated thereby until, at the high point of price, which may represent profiteering to the producer, price is speedily overtopped by production; stimulated by these high prices and there is great overproduction. Price then starts rapidly down; production follows it until the low point of price is again reached; another flat level of non-production, when price starts back up and there is another big angle which represents excessive prices for the materials and large overproduction, followed by rapid cut of price, diminution in production until another low point in the industry is reached, which represents bankruptcies for many operating companies, and a flat level of non-production which accelerates another upward price move.

Under such circumstances the swing of prices is rapid and over a wide area, and the price fixed by the manufacturer who uses any one of these raw materials as part of his finished product, is based on the top price range, for he must be prepared in the price of his finished product to meet a cost for his raw material represented by the possible high ranges of price. For example, in 1918, when the price of quicksilver, one of the metals from which this composite chart was made up, was at its peak of high price, about $250 per flask, the price of fulminate of mercury caps, into which goes 65 percent of mercury produced, was $16.00 a thousand. At the time this chart was made with the price of quicksilver at the low point on the chart and at the lowest point seen in years, $30.00 to $35.00 a flask, the price of fulminate of mercury caps was $18.00 a thousand.

You can see that price and production in the lower chart follow the laws of supply and demand as in the upper chart, but with this vital difference: The industry being protected from extreme low ranges of price by tariff, the price does not drop to a point where there is widespread bankruptcy in the industry and where the price is below the cost of production. Therefore production does not fall to the flat level of non-production shown in the unprotected mineral industries.

Similarly, as there is no flat level of non-production, there is no rapid stimulation of price which forces production up to a point of overproduction. Now the man in the street, the ultimate consumer, is not interested in the prosperity or failure of your business. He doesn't care if individuals or companies go bankrupt or if the whole zinc industry is poverty stricken. He is not even interested in your big profits in times of prosperity but

NO "CHINESE WALL"

** * * There has been much talk of the danger of building a Chinese tariff wall about this country. That is not the purpose of a protective tariff. We are going to have a protective tariff. Those of us who favor a general protective tariff are glad of it. Those of us who do not favor it might as well face this fact, and if we draw a line around the mining industry and say this protective tariff shall not apply to the mining industry we are permitting the rest of the United States to benefit by whatever benefits are to be derived from the protective tariff and we are building this Chinese wall about our own industry—the mining industry. Can we justify this course to the men in the mining industry who have to employ the labor, who have to meet the payrolls? * * **

he does care mightily about the effect that this has on the price of his galvanized wash tub. The important thing to the consumer is that the cost of the raw material on which the manufacturer bases the cost of his finished product is at a much lower top range of probable price than is possible under the unprotected industries. Tariff in short has acted as a huge economic gyroscope in maintaining a smooth running-level in the price and production movement in the industry so protected.

Many objections have been raised to these proposed mineral duties—all of these objections based on theoretically sincere premises I am sure. If I may be permitted to do so, I should like to briefly answer a few of these objections which have appeared this evening. The most ubiquitous of these objections has been based on the plea of conservation. The policy of conservation is so wise a one that we must be careful not to be led under its standards into cessation of development. You, as mining engineers, know that conservation of a mine and abandonment of a mine are vastly different things. You know that, despite the fact that it is popularly so supposed by the layman, we cannot drive a stake in the ground and mark the spot: "Here lies the body of John J. Manganese—To be dug up in the event of war."

"Requiescat in pace" would be the proper inscription for such a monument.

Mr. Westervelt knows from his war time experience the utter futility of the hope of immediate availability of raw materials in the form of natural resources for war time needs. He will agree with the estimate of Army officers that from the time of the declaration of war until undeveloped, unproduced minerals can be mined under government supervision or with government stimulation, smelted, refined, made into necessary military material and got to the front, that a period of three years will elapse. Three years—that is the estimate of time for such a procedure by the War Department.

Mr. Ridell, who has spoken to you this evening, was at one time in an activity in which his views were more in harmony with mine than some of his views may be today. He was formerly chief metallurgist of the United States Tariff Commission and I am sure he will pardon me for quoting from a most significant utterance he made when he was so serving. He said, "Conservation, yes, but there is such a thing as a conservation of inertia against which we must guard. As between a totally undeveloped natural resource and a totally depleted one in time of war emergency there is no choice."

In discussing conservation we must therefore choose between the inert conservation of resources and the conservation of industry. For this last phrase, I am indebted to Mr. Dolbear and I think it a splendid one for us to reflect upon the conservation of industry.

Conditions change. The article desirable and available for military needs today may not be tomorrow. We must not sit on the eggs of our natural resources until they are addled. Let us suppose that at the beginning of this republic there had been a committee sitting as this body is sitting tonight which represented the utmost development of engineering skill and science of the time. Let us suppose that this committee had said: "We must conserve for future generations those things which will be needful for the defense of the republic in the time of war," and let us suppose that today these resources so set aside were turned over to the agencies of the government which had in charge those portions of our national defense. There would have been turned over to the Secretary of War an acreage of pine forest in Maine, from which to build our masts for our fighting ships. There would have been turned over to him an acreage of oak forest in Pennsylvania, from which to build the hulls and beams of our fighting vessels.

There would have been turned over to the Secretary of War an acreage of chestnut forest in Virginia from which to make the best grade of charcoal for our powders. There would have been turned over to him the iron reserves of New Jersey, from which to fashion the barrels of the rifles, and most precious of all there would have been turned over to him those matchless flint deposits of Maryland, from which to make the flint locks for the muskets.

In our political life we can make provision for the relationship which shall exist between man and man politically for the future because political relationships are based on understood principles of equity as between human beings. We cannot base far in the future the considerations which shall govern their relations economically because we do not know what their economic situation is going to be and what things are going to be of value economically.

The further objection has been raised that we cannot create an element or mineral by legislation. That statement is absolutely true; so true that it almost blinds us to the more important truth which is that we can discover and we can develop an element or a mineral by legislation. Five years ago there was an element so rare that all of it which existed isolated in the known world could have been contained within the space occupied by this pencil. Last week, in common with two hundred thousand other people, of Washington, I stood and watched in awe the first dirigible airship filled with this very element, a non-explosive gas, sail over the city. This gas, as we all know, was helium. How had it been discovered and developed? By legislation; by legislation fostered and made possible by Dr. Manning, who was largely instrumental in the development which followed the legislation.

There are two policies of levying duties, first, the free trade policy, under which all articles which are not produced within the country are imported under high duties for the purpose of raising revenue and articles which are produced or manufactured within the country are admitted free for the purpose of stimulating competition and creating lower prices. The opposite policy is to admit free of duty those articles which are not produced or manufactured within the country and to levy a protective tariff on those articles which are manufactured within the country. It is far better for us as a nation that we import coffee free from Brazil and levy a duty against Cuban sugar, that we import free Turkish rugs and levy a heavy import duty on Wilton carpets, that we import free platinum and levy a duty on manganese ore and that we increase our purchases abroad not by bringing foreign labor into competition with our own but by internal prosperity increasing our purchasing power abroad to increase our purchases of those things which are not produced within the United States, and this is what occurs under a protective tariff.

When you argue the question of the desirability of tariff protection at all, you are not arguing the question of a tariff on minerals. In order to discuss the question of a tariff on minerals, it is of course necessary to admit that the protective tariff policy in it shall be desirable.

Additional views held by Mr. Smith concerning the policy of protective tariff on these mineral industries, incorporating the suggestion that the minerals and mineral reserves be classified in their order of sufficiency of reserve as indicated by annual consumption, will appear in the March issue of the MINING CONGRESS JOURNAL as a continuation of this article.

METAL OUTPUT OF PAST YEAR REFLECTS OPERATING HANDICAPS

METAL MINING OPERATIONS in the western states struggled through an acute depression in 1921, excessive production and transportation costs, coupled with low prices brought on by a lack of demand, being responsible for the wide swathes cut in output totals of the five leading metals.

Provisions of the Pittman act prevented the five-metal production figures from sinking lower still in 1921, returns from silver-content ores making possible operations increasing the output of other metals.

Gold production showed marked decreases generally from the 1920 levels, the exceptions being in California, South Dakota, Texas, and Washington, where more favorable local conditions prevailed. With the price of copper consistently holding positions well below the cost of production, output in all states showed heavy decreases last year, amounting in many cases to a very small percentage of the 1920 figures. Lead and zinc suffered in like degree, no state reporting more than a fraction of its 1920 production in its returns for 1921.

ARIZONA.—Gold and silver production in Nevada in 1921 amounted to less than half that of the previous year, according to the estimate of V. C. Heikes, of the the United States Geological Survey. The output of copper decreased by two-thirds during the year. No zinc was marketed, and lead production was abnormally reduced.

	1920	1921
Gold	$4,786,122	$3,046,000
Silver (fine ounces)	5,355,303	2,179,000
Copper (pounds)	558,256,302	163,087,000
Lead (pounds)	14,599,765	5,182,000
Zinc (pounds)	1,457,000	.....

Gold produced in Arizona decreased from $4,786,122 in 1920 to about $3,046,000 in 1921, largely because of the closing of the copper mines, but partly because of the smaller output of gold ore.

Silver production decreased from 5,355,303 ounces in 1920 to about 2,179,000 ounces in 1921. As most of the silver is associated with copper ore the decreased output of silver was due to the decreased mining of copper.

Copper production decreased from 558,256,302 pounds in 1920 to about 163,087,000 pounds in 1921. The value of the output decreased from $102,719,160 in 1920 to about $20,565,000 in 1921, owing to the curtailment of production and the decrease in the average price of copper from 18.40 cents to 12.50 cents a pound.

Lead production in Arizona decreased from 14,599,765 pounds in 1920 to about 5,182,000 pounds in 1921. The value of the output decreased from $1,167,981 to about $238,000.

As the demand for zinc was poor and the price decreased to about 5.11 cents a pound, no zinc ore was shipped from mines in Arizona. The Arizona Hillside property in Yavapai county was idle.

The dividends paid by Arizona mining companies during the first eleven months of 1921 amounted to about $5,225,828, exclusive of $2,475,000 paid by the Phelps Dodge Corporation, which also operated mines in Mexico and New Mexico. The companies that paid dividends were the Miami, United Eastern, United Verde, Calumet & Arizona, United Verde Extension, and Phelps Dodge Corporation, the last principally for the Copper Queen mine.

CALIFORNIA.—The metal output of California in 1921 was approximately 761,660 ounces of gold, valued at $15,744,910; 3,514,276 ounces of silver, which under the Pittman law was worth nearly the same number of dollars; 11,681,705 pounds of copper; 779,298 pounds of lead, and 842,400 pounds of zinc, according to estimates by J. M. Hill, of the San Francisco office of the United States Geological Survey. The production of these metals in 1920 was: Gold, 692,297 ounces, valued at $14,311,043; silver, 1,706,327 ounces; copper, 12,626,272 pounds; lead, 4,813,510 pounds; zinc, 1,165,509 pounds.

	1920	1921
Gold	$14,311,043	$15,744,910
Silver (fine ounces)	1,706,327	3,514,276
Copper (pounds)	12,626,272	11,681,705
Lead (pounds)	4,813,510	779,298
Zinc (pounds)	1,165,509	842,400

The above figures reflect exactly the trend of mining during 1921. The market for copper, lead, and zinc was so poor that very few mines which make these metals their major product were in operation. A little lead ore rich in silver was mined, as well as some zinc ore, which was converted into zinc oxide. On the other hand, the mines that produce mainly gold or silver were active throughout 1921, and numerous mines were reopened during the year.

On the whole the outlook is encouraging, for if only a small number of the many enterprises started near the end of 1921 mature, the year 1922 will witness much more mining activity throughout the state than has been known for some time.

COLORADO.—Metal mines of Colorado in 1921, according to C. W. Henderson, United States Geological Survey, Department of the Interior, produced $6,790,000 in gold, 5,400,000 ounces of silver, 20,600,000 pounds of lead, 3,700,000 pounds of copper, and 2,400,000 pounds of zinc, having a total value of $13,678,800, as compared with the total value of $21,898,974 in 1920. These figures show a decrease of $786,300 for gold, 9,335 ounces for silver, 26,000,000 pounds for lead, 343,000 pounds for copper, and 46,390,000 pounds for zinc.

	1920	1921
Gold	$7,576,300	$6,790,000
Silver (fine ounces)	5,409,335	5,400,000
Copper (pounds)	4,043,003	3,700,000
Lead (pounds)	46,600,000	20,600,000
Zinc (pounds)	48,790,000	2,400,000

The Leadville and Durango lead-copper smelters did not operate all their furnaces. The Pueblo lead-copper smelter continued operations until the flood of June 3, when the plant was closed.

Teller county (Cripple Creek), after the heavy setback of 1920, experienced a revival in 1921, owing to the return of many former lessees, who commenced operations on dumps and began to develop former producing properties, but the results were not apparent in the output, which was $4,300,000 in gold in 1921, as compared with $4,323,998 in 1920.

Leadville, one of the oldest and most persistently producing districts in Colorado, which mines many kinds of ore and shows great fluctuation in production according to changes in the prices of metal, was affected seriously by the low prices of lead and zinc.

Three dredges at Breckenridge and small hydraulic operations yielded $340,000 in placer gold, as compared with $374,000 from four dredges in 1920. Some development work was done at Kokomo. After several years testing of placer ground, construction was started at Fairplay, Park county, on the hull of a dredge, and an

order was placed for machinery, to be delivered in the spring of 1922.

IDAHO.—Collapse of the metal market closed copper-lead and zinc mines of high production normally. Only the high price of silver prevented large silver-lead mining properties from being forced into similar action. The 1921 value of gold, silver, copper, and lead mined is estimated by C. N. Gerry, of the United States Geological Survey, at $15,208,000, a marked decrease from the 1920 value of $31,170,176.

	1920	1921
Gold	$485,590	$497,000
Silver (fine ounces)	7,326,794	5,720,000
Copper (pounds)	2,538,396	1,436,000
Lead (pounds)	249,609,976	192,000,000
Zinc (pounds)	27,932,326	None

Mine output of gold in Idaho in 1921 was valued at about $497,000, as compared with $485,590 in 1920.

Silver production decreased from 7,326,794 ounces in 1920 to about 5,720,000 ounces in 1921. The mines in the Coeur d'Alene district produced about 4,800,000 ounces of silver, or about 84 percent of the total for the state. The output of copper decreased from 2,538,396 pounds in 1920 to about 1,436,000 pounds in 1921. The value of the output decreased from $467,065 to about $181,000.

Lead production decreased from 249,609,976 pounds in 1920 to about 192,000,000 pounds in 1921.

No zinc ore was shipped from Idaho in 1921, though the output of recoverable zinc in 1920 was 27,932,326 pounds.

MONTANA.—Though there was some activity in mining silver and silver-lead ores, the output of metals in Montana in 1921 was far below normal. The value of the gold, silver, copper, lead, and zinc mined in 1921 was $16,212,000, as compared with $65,573,047 in 1920, according to estimates by C. N. Gerry, of the United States Geological Survey.

	1920	1921
Gold	$1,851,165	$1,360,000
Silver (fine ounces)	12,579,178	6,233,000
Copper (pounds)	177,059,260	51,595,000
Lead (pounds)	31,253,916	21,674,000
Zinc (pounds)	184,337,786	23,000,000

Gold production decreased from $1,851,165 in 1920 to about $1,360,000 in 1921. The production of gold from copper ores was greatly reduced, and the output from siliceous ores and placers was much less than in 1920.

Silver production decreased from 12,579,178 ounces in 1920 to about 6,233,000 ounces in 1921, and the value of the output decreased from $13,711,304 to about $6,198,000. In past years most of the silver came from copper ores, but in 1921 many of the copper mines and other large producers of silver were idle the greater part of the year.

Output of copper decreased from 177,059,260 pounds in 1920 to about 51,595,000 pounds in 1921. The Anaconda and Pittsmont smelters during January, February, and March produced an average of more than 11,000,000 pounds of copper a month.

Lead production decreased from 31,253,916 pounds in 1920 to about 21,674,000 pounds in 1921, and the value of the output decreased from $2,500,313 to about $997,000. Some of the largest producers of lead, such as the Butte & Superior, Anaconda, Snow Storm, and Angelica, were either idle or operated at reduced capacity in 1921.

Output of recoverable zinc in Montana decreased from 184,337,786 pounds in 1920 to about 23,000,000 pounds in 1921. The value of the output decreased from $14,931,361 to about $1,155,000. No zinc concentrate was shipped to eastern zinc plants, but the electrolytic zinc plant near Great Falls was partly operated on silver-lead-zinc ores from the Anaconda Company's mines at Butte.

No dividends were paid by mining companies operating in Montana during the first eleven months of 1921.

NEVADA.—Value of the gold, silver, copper, and lead mined in Nevada decreased from $23,879,512 in 1920 to about $12,310,000 in 1921, according to preliminary figures compiled by V. C. Heikes, of the United States Geological Survey. The decrease was general, but the output of copper and lead was unusually small, as a result of the poor market and lower prices for these metals. No zinc ore was marketed.

	1920	1921
Gold	$3,566,728	$3,340,000
Silver (fine ounces)	7,745,093	6,681,000
Copper (pounds)	50,559,763	15,515,000
Lead (pounds)	21,263,700	7,803,000
Zinc (pounds)	10,698,040	None

Output of gold in Nevada decreased from $3,566,728 in 1920 to about $3,340,000 in 1921. The output of gold from the Tonopah district decreased from $1,056,986 in 1920 to about $982,000 in 1921, on account of a labor strike which interrupted operations from April to August. The production of the Goldfield district also decreased from $155,789 in 1920 to about $109,750 in 1921. There was much activity in the Comstock district, especially in development work, but the output of both gold and silver was slightly less than that of 1920. The Rochester district upheld its production, though the Nevada Packard was idle part of the year.

Silver production decreased in quantity from 7,745,093 ounces in 1920 to about 6,681,000 ounces in 1921, and in value from $8,442,000 to about $6,655,000. The large mines of the Tonopah district produced about 4,581,000 ounces of silver in 1921, as against 4,816,055 ounces in 1920.

Copper production decreased in quantity from 50,559,763 pounds in 1920 to about 15,515,000 pounds in 1921, and in value from $9,302,996 to about $1,956,000.

Lead production decreased in quantity from 21,263,700 pounds in 1920 to about 7,803,000 pounds in 1921, and in value from $1,701,096 to about $359,000.

No zinc ore was mined in Nevada in 1921, though the production of zinc was 10,698,040 pounds in 1920. It was not profitable to ship zinc ore to eastern smelters on account of the high freight rate and the decreased price of zinc.

Dividends declared by Nevada mining companies for the first eleven months of 1921 amounted to $640,357. The principal contributors were the Tonopah Extension, Rochester Silver, Tonopah Belmont, and Tonopah Mining companies.

NEW MEXICO.—Metal mines in New Mexico produced in 1921 $184,000 in gold, 671,000 ounces of silver, 500,000 pounds of lead, 14,460,000 pounds of copper, and 20,000 pounds of zinc, as compared with $480,302 in gold, 768,042 ounces of silver, 2,869,525 pounds of lead, 54,400,691 pounds of copper, and 10,013,580 pounds of zinc in 1920, according to C. W. Henderson, of the United States Geological Survey. These figures indicate that during 1921 only ores carrying considerable silver could be mined profitably.

	1920	1921
Gold	$480,302	$184,000
Silver (fine ounces)	768,042	671,000
Copper (pounds)	54,400,691	14,460,000
Lead (pounds)	2,869,525	500,000
Zinc (pounds)	10,013,580	20,000

OREGON.—Production of metals in Oregon in 1921 is estimated by J. M. Hill, of the United States Geo-

logical Survey, to have been approximately 37,500 ounces of gold, valued at $775,194; 43,120 ounces of silver, 274,400 pounds of copper, and 350 pounds of lead. Although this represents a decrease of $242,296 in value of the gold, 48 percent in the quantity of silver, and 88 percent in the quantity of copper, as compared with 1920, mining in the state at the end of 1921 was far from being as depressed as these figures might indicate.

SOUTH DAKOTA.—The Homestake mine and mills, at Lead and Deadwood, S. D., began the year 1921 with increased activity and in April were working almost at full capacity, according to C. W. Henderson, of the United States Geological Survey, Department of the Interior. From May the operations continued at full capacity throughout the year. In May, 1921, the Homestake resumed the payment of dividends, the first since September, 1919. The Trojan mine and mill were in continuous operation throughout the year. The Golden Reward Co. moved the machinery of its cyanidation plant from Deadwood to Terry. Considerable development work was done at other properties during the year.

	1920	1921
Gold	$4,676,470	$6,464,000
Silver (fine ounces)	90,795	111,000

No lead or copper produced in 1921.

TEXAS.—Metal mines in Texas produced 544,000 ounces of silver in 1921 as compared with 511,401 ounces in 1920. The principal producing mine was the Presidio mine, at Shafter, which was operated steadily throughout the year. A very small quantity of gold was also obtained from Texas ores in 1921, but no lead or copper was produced.

UTAH.—Value of the gold, silver, copper, and lead produced from mines in Utah in 1921, according to V. C. Heikes, of the United States Geological Survey, Department of the Interior, was about $22,595,000, a decrease from $49,744,334 in 1920. The output of all metals was decidedly less than that of 1920, and the output of copper was less than one-third that of 1920.

	1920	1921
Gold	$2,014,556	$1,794,000
Silver (fine ounces)	13,106,976	12,366,000
Copper (pounds)	116,931,238	34,534,000
Lead (pounds)	140,838,113	89,782,000
Zinc (pounds)	8,157,739	.....

Gold production decreased from $2,014,556 in 1920 to about $1,794,000 in 1921. The gold produced from copper ore was decidedly less, and the producers of siliceous ores containing gold and silver suffered from excessive costs and smelter restrictions.

Output of silver decreased from 13,106,976 ounces in 1920 to about 12,366,000 ounces in 1921. The decrease in silver was especially noticeable at Bingham, Park City, and Ophir.

Copper production decreased from 116,931,238 pounds in 1920 to about 34,534,000 pounds in 1921, and the value decreased from $21,515,348 to about $4,354,000.

Lead production decreased from 140,838,113 pounds in 1920 to about 89,782,000 pounds in 1921. The value of the output decreased from $11,267,049 to about $4,130,000. As the average price of lead was about 4.60 cents a pound, it was not profitable to ship lead ore unless it contained much silver.

Output of recoverable zinc in 1920 was 8,157,739 pounds, but market conditions prevented shipments of zinc ore or concentrate in 1921. It was not profitable to ship zinc ore to eastern plants on account of the high freight rates and decreased price of the metal.

WASHINGTON.—Metal production in Washington in 1921 was less than at any time during the past decade, the value of output decreasing from $1,200,932 in 1920 to $356,000. The generally prevalent conditions, fostered by high operating and transportation costs, accompanied by peculiar market conditions, were responsible, according to the reports compiled by C. N. Gerry, of the United States Geological Survey.

	1920	1921
Gold	$120,860	$148,000
Silver (fine ounces)	199,678	132,000
Copper (pounds)	1,983,134	402,000
Lead (pounds)	5,787,247	132,000
Zinc	Incomplete report	

Production of gold in Washington increased from $120,860 in 1920 to about $148,000 in 1921. Most of the gold came from the Republic district, Ferry county, but the shipments of siliceous ore were restricted by high freight rates.

Mine output of silver decreased from 199,678 ounces in 1920 to about 132,000 ounces in 1921. Mines at Republic, Nighthawk, Chewelah, and Colville produced most of the silver.

The mine output of copper decreased from 1,983,134 pounds in 1920 to about 402,000 pounds in 1921. Crude copper-silver ore was shipped from the United Silver Copper mine, at Chewelah, at the rate of about 100 tons a month instead of 300 tons of crude ore and concentrate a month as in 1920.

The mine output of lead decreased from 5,787,247 pounds in 1920 to about 132,000 pounds, valued at $6,072, in 1921. It was unprofitable to ship lead ore from the Electric Point and other mines near Northport, as the average price of lead was about 4.6 cents a pound and the ore contains little or no silver.

WYOMING.—Owing to the low price of copper the Sunrise iron (copper) mine at Hartville was idle for a part of 1921 and shipped no copper ore during the year, according to the United States Geological Survey. The Electrolytic Old Rambler) mine at Holmes shipped one car and stored several cars of copper-gold-silver ore awaiting negotiations which, it is hoped, may result in payment for the palladium-platinum content of the ore. No other production was made in Wyoming and very little development work was done.

MINERS' RESISTANCE TO WAGE REDUCTIONS ATTACKED

CHARGING THAT THE unemployment situation is due to the failure of labor to adjust its wages to the relation of commodity prices, Representative Black, Texas, in a speech before the House, declared groups of highly organized labor in the coal mines had resisted efforts to lower wages in any appreciable degree by holding to the premise that labor is not a commodity and should not respond to conditions which affect commodity prices.

Taking this as a basis of union policy, Mr. Black stated that while labor is not a commodity as such, the price of labor to producers was dependent upon the price of the commodity. He insisted that wages of labor and profits of industry must be brought into an equitable arrangement.

"The mine worker who thinks he owes none of his success and prosperity as a worker to cooperation with capital does not stop to think that the ore he brings out would have no value but for the ability to transport it to a furnace erected by capital and labor, and there melt it into pig iron," said Mr. Black.

IRON ORE PRODUCTION CUT OVER HALF IN 1921

IRON ORE MINED in the United States in 1921, exclusive of that containing more than 5.5 percent of manganese, is estimated at 29,547,000 gross tons, a decrease of 56 percent as compared with the output of 1920. Shipments of ore from the mines in 1921 are estimated at 27,009,000 gross tons, valued at $89,688,000, a decrease in quantity of 61 percent and in value of nearly 69 percent as compared with the shipments in 1920. The stocks of iron ore at the mines, mainly in Michigan and Minnesota, apparently increased from 11,378,794 gross tons in 1920 to 13,872,000 tons in 1921, or 22 percent.

The output of iron ore in 1921 was the lowest since 1904, when 27,644,330 tons was mined.

These estimates, based on preliminary figures covering 97 percent of the normal output of iron ore, were prepared by Ernest F. Burchard and Hubert W. Davis, of the Geological Survey.

Production for 1920 and 1921 is shown in the following tables:

District	Ore mined (gross tons) 1920	1921
Lake Superior:		
Michigan	17,510,742	7,054,000
Minnesota	39,453,172	18,093,000
Wisconsin	981,134	247,000
	57,945,049	25,394,000
Southeastern States:		
Alabama	5,894,011	2,927,000
Georgia	104,511	
North Carolina	71,810	95,000
Tennessee	375,538	
Virginia	320,924	
	6,766,794	3,022,000
Northeastern States:		
New Jersey	431,567	58,000
New York	920,009	470,000
Pennsylvania	734,383	140,000
	2,085,959	668,000
Western States:		
Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming	740,226	429,000
Other States:		
Connecticut, Maryland, Massachusetts, and Missouri	66,437	34,000
Grand Total	67,604,465	29,547,000

Lake Superior district producers led the country with about 86 percent of the iron ore mined and shipped in 1921; 25,394,000 gross tons were mined and 23,155,000 tons were shipped, decreases of about 56 and 61 percent, respectively, as compared with the quantities mined and shipped in 1920. The ore shipped in 1921 was valued at $81,091,000, a decrease of about 68 percent.

Mines in Minnesota furnished 78 percent of the total iron ore shipped from the Lake Superior district in 1921 and 67 percent of the total of the United States. The mines in Michigan furnished nearly 22 percent of the Lake shipments and a little more than 18 percent of the grand total.

Southeastern states, which constitute the second largest iron ore producing area, including the Birmingham and Chattanooga districts, mined 3,022,000 gross tons of iron ore in 1921, a decrease of 55 percent as compared with 1920. The shipments of ore from these states to blast furnaces in 1921 amounted to 2,946,000 gross tons, valued at $6,343,000, a decrease in quantity of 56 percent and in value of 67 percent as compared with the quantity and value of shipments in the previous year.

Northeastern states, which include New Jersey, New York, and Pennsylvania, mined 668,000 gross tons of iron ore, and shipped 444,000 gross tons, a decrease of 68 percent from the quantity mined and of 79 percent from the quantity shipped in 1920.

AVAILABLE COPPER SUPPLIES GREATLY REDUCED

SMELTER PRODUCTION of copper during 1921 from domestic ores amounted to approximately 461,000,000 pounds, according to preliminary estimates made by H. A. C. Jenison, of the Geological Survey. The refinery production was about 601,000,000 pounds from domestic material and 320,000,000 pounds from foreign material, each figure representing a decline from the 1920 mark. Imports of refined copper decreased from 109,000,000 pounds in 1920 to 75,000,000 pounds in 1921, while stocks of new refined copper on January 1 of each year showed an increase from 631,000,000 to 659,000,000 pounds. The total available supply showed a heavy drop from 2,266,000,000 to 1,655,000,000 pounds.

Exports, exclusive of manufactured copper, increased from 553,000,000 to 587,000,000 pounds, while stocks on hand December 31 dropped from 659,000,000 to 496,000,000 pounds.

These estimates indicate a decrease in net domestic withdrawals from primary refined copper stocks amounting to almost 50 percent, the 1920 figure being 1,054,000,000 pounds, while 1921 shows 572,000,000 pounds.

The total new supply of primary refined copper for the year was about 989,000,000 pounds, which includes refined copper produced from foreign and domestic material as well as imported refined copper. The stocks of refined copper in the hands of domestic refineries on December 31, 1921, excluding those in transit, as estimated by the refining companies, were about 496,000,000 pounds. The stocks of blister copper on December 31, 1921, including material in process, in the hands of smelters, in transit to refineries, and at refineries, were estimated by refining and smelting companies at about 297,000,000 pounds.

MANGANESE IN 1921

DOMESTIC SHIPMENTS of high-grade manganese ore—containing 35 percent or more metallic manganese—amounted to about 13,000 gross tons in 1921, of which more than 10,000 tons was shipped from Montana, according to H. A. C. Jenison, of the Geological Survey. The shipments of ore containing 10 to 35 percent of manganese amounted to about 72,000 tons, most of which was shipped from Minnesota. The shipments of manganiferous and ferruginous manganese ore amounted to about 14,000 tons.

The net imports for the first eleven months of the year amounted to 386,405 tons of high-grade ore and oxide, valued at $3,288,595. Of this Brazil contributed 247,568 tons, valued at $7.58 per ton, and India 113,730 tons, valued at $6.46 per ton.

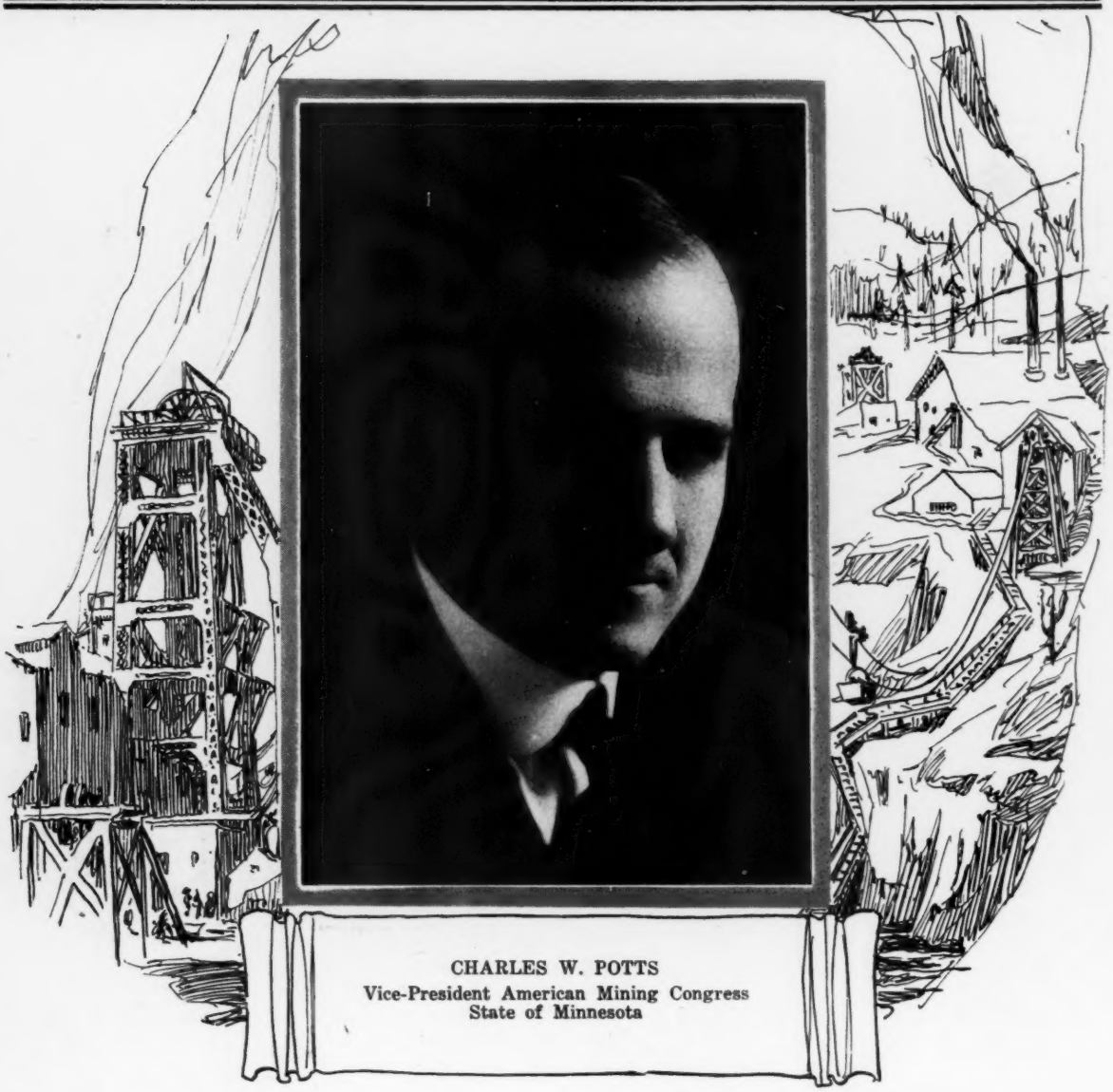
The most important event that may affect the future of the domestic industry was a favorable report by the House of Representatives on a proposed tariff on imports of manganese ore of 1 cent per pound of metallic manganese content of ore or of concentrates containing more than 30 percent of metallic manganese. The measure has not been reported on by the Senate committee.

HARRY N. TAYLOR
Vice-President American Mining Congress
State of Missouri

A HIGH AUTHORITY recently cited Mr. Taylor as possessing "the largest individual store of coal industry knowledge held by any man in the country." Entering the coal business 38 years ago as a salesman, he has advanced successively through all branches of the industry. This long experience has given him an intimacy with detail, carrying its endowment of success. He now is president of the Central Coal and Coke Company.

Organization of coal operators early presented itself to Mr. Taylor as a necessity, and ten years ago he founded the nucleus of the first national coal association.

His position as a leader in the coal industry is indicated by the following list of offices which he has held: President, National Coal Association; director, American Mining Congress; president, Illinois Mine Operators' Association; member of advisory council of the Fuel Commission, and representative of the Fuel Administration in the southwest.



CHARLES W. POTTS
Vice-President American Mining Congress
State of Minnesota

MR. POTTS primarily is an explorer of minerals, having followed the diamond drilling business for more than fifteen years. Most of his activities have been on the Cuyuna Range, in Minnesota, with the development of which he is closely allied. He is also largely interested in the development of manganese properties in Arkansas.

For the past year he has been closely identified with the work for the procurement of a tariff on manganese and manganese alloys, and is considered one of the foremost authorities upon this important subject. Probably no man in the United States is so well posted concerning every phase of this industry.

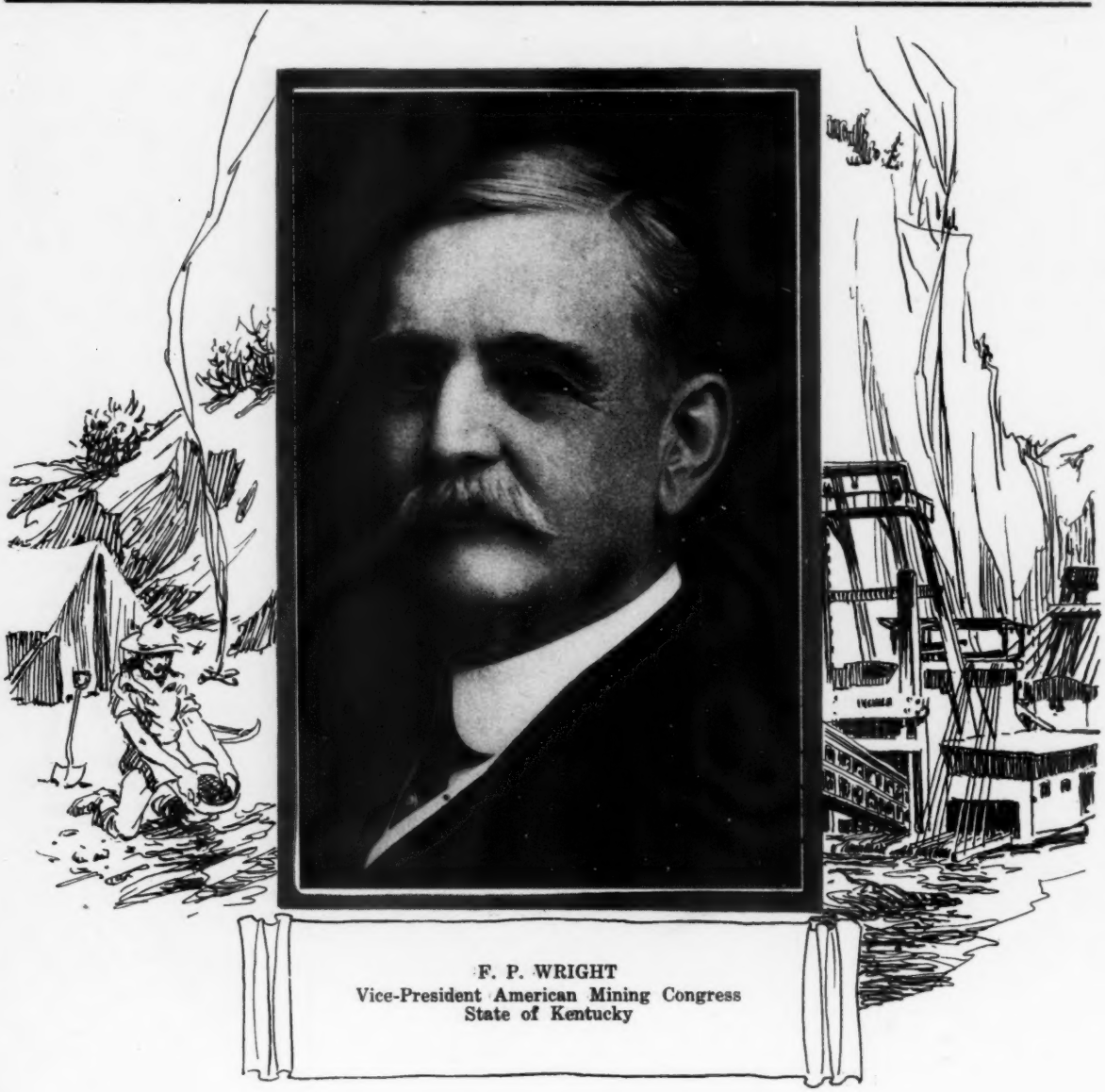
He always has taken an active part in the mining and political affairs of his state. He has been prominent in the tonnage tax controversies which always have been a problem in the Minnesota legislature.

C. E. MAURER
Vice-President American Mining Congress
State of Ohio

HOLDING PROMINENCE in the Ohio coal industry throughout the past twenty years, Mr. Maurer has represented the operators of that state in all the Interstate Wage Conferences since 1902. He was president of the Glens Run Coal Company, of Cleveland, from the time of its organization in 1900 until it disposed of its properties at the beginning of the present year.

He was one of the original organizers of the Pittsburgh Vein Operators' Association of Ohio, serving as president of the organization for two terms and chairman of the operating committee until 1921.

Mr. Maurer's development activities include, in addition to the Glens Run properties, the mines of the Standard Pocahontas Coal Company, of which he was president from 1907 until 1918.



F. P. WRIGHT
Vice-President American Mining Congress
State of Kentucky

MR. WRIGHT is one of the best known men in the bituminous coal mining industry in Kentucky. He has been prominently identified with the development and operation of coal properties in that state since 1900, and has had ample opportunity to watch the growth of that industry.

As general manager of the Crescent Coal Company, of Bevier, he has familiarized himself with state and national problems, and is ever ready to give his assistance in their solution.

He has for years been a member of the American Mining Congress, taking an active interest in its work. He also is a member of the National Coal Association, the Western Kentucky Coal Operators' Association, and the Kentucky Mine Owners' Association. He is one of the "willing-workers" for the coal industry in state and national issues.

NO RADICAL INCREASE OF GOLD OUTPUT EXPECTED DURING THIS YEAR

GOLD PRODUCTION in the United States during 1921 decreased $2,081,400 in value, as compared with 1920, while silver production showed a corresponding decline of 4,997,184 ounces, according to preliminary estimates made by the Director of the Mint, based upon data secured through cooperation of the Geological Survey. Total gold production for the United States during 1921 is given as 2,375,479 ounces, valued at $49,105,500, while the silver output is estimated at 50,364,389 ounces.

Commenting on prospects of gold production during 1922, experts of the Geological Survey express the opinion, unofficially, that no radical increase over the 1921 figures will be achieved. This belief is based upon the fact that little or no development work has been carried on during the reign of excessive operation costs. It is the opinion of close students of the situation that the effects of this period during which development activities have been at a low ebb will be felt by the industry long after reduced operation costs permit the mines to produce at a profit.

California produced more than twice as much gold as any other state during 1921. Utah and Montana led in production of silver. The production of gold by states follows:

State	Gold Ounces	Value
Alaska	362,633	$ 7,496,300
Alabama	5	100
Arizona	156,038	3,225,600
California	739,214	15,280,900
Colorado	331,354	6,849,700
Georgia	39	800
Idaho	25,315	523,300
Maine	10	200
Missouri	10	200
Montana	80,835	1,671,000
Nevada	155,472	3,213,000
New Mexico	10,981	227,000
North Carolina	73	1,500
Oregon	40,079	828,500
South Dakota	315,981	6,531,000
Tennessee	251	5,200
Texas	68	1,400
Utah	89,184	1,843,600
Virginia	24	500
Washington	8,436	174,400
Wyoming	10	200
Philippines	59,467	1,229,300
Total	2,375,479	$49,105,500

Silver production by the various states is estimated as follows, the value being $1 per ounce as provided by the Pittman Act:

State	Ounces	State	Ounces
Alabama	4	Nevada	6,719,455
Alabama	4	New Mexico	625,334
Arizona	2,864,962	N. Carolina	12
California	3,460,219	Oregon	55,713
Colorado	5,408,273	S. Dakota	112,880
Georgia	3	Tennessee	134,549
Idaho	6,716,692	Texas	544,337
Illinois	1,800	Utah	13,233,658
Maine	3	Virginia	7
Michigan	304,616	Washington	141,244
Missouri	62,000	Wyoming	103
Montana	9,168,011	Philippines	34,429
Total	50,364,389		

Strong possibility exists that the difference shown between the 1920 and 1921 output may be changed materially when the data is checked and final reports are made. Preliminary estimates of the 1920 production varied by almost $3,000,000 from the figures presented in the final report.

The production record was set in 1915, when the gold output was valued at $101,035,700, and 74,961,075 ounces of silver were mined.

Indicative of the gold mine operation cost situation in California, where the industry has best recovered, it is being pointed out that the peak price for labor was a 60 percent increase over the 1915 price, with only a 12 percent decrease from the top level to the present time. While recognition is given the fact that labor is more efficient now than when wages were at the peak, this condition does not make more than a nominal difference in the comparison of ultimate labor costs. The cost of electric power in California has not decreased. Powder is about 65 percent higher than in 1915.

Labor, power, explosives and lumber, forming the greater portion of present costs, are less expensive than two years ago, but have not yet approached within a range close to the 1915 level. California operators express certainty that low-grade producers in that district have little hope for recovery until costs have reached a point not over 10 to 15 percent greater than they were in 1915, doubt even being expressed in some quarters that they can resume profitable operation at that level, reopening and rehabilitation expenses being taken into consideration.

CONSUMPTION OF GOLD BY ARTS EXCEEDS YEAR'S PRODUCTION

AN OUTSTANDING EXCESS of consumption of gold used in the arts during the fiscal year ending June 30, 1921, over total production of the metal in this country is indicated by the annual report of Director of the Mint Roy Baker, the arts using a total valued at $82,215,087, while the production stood at $51,186,000. Of the arts' consumption, $54,009,609 was new material.

The year ending June 30, 1921, stood high in mint coinage, with a total of 553,868,492 pieces, being exceeded in the history of the mint only by 1918 and 1920.

The total value of gold acquired at mints and assay offices were $673,161,954. Silver purchases amounted to 66,126,511 ounces, which exceeded those of any other year. Of this silver 62,880,550 ounces were purchased under the Pittman Law at $1.00 per ounce, the other being purchased at an average of 77 cents per ounce.

General conditions in the gold mining industry in California in 1920 were such that all the larger gold mines curtailed operations, many by 50 percent, numbers ceased work for a time while others closed permanently, allowing the mines to fill with water, according to the report. In deep mines the cost of producing an ounce of gold increased from $9.51 in 1913 to $19.15 in 1920. The Cripple Creek gold district of Colorado labored under the difficulties of high costs and the unchanging value of gold. In Oregon the cost of labor and supplies was excessive and prevented full time work in the productive mines, closing some of them altogether and also stopping prospecting and prohibiting the starting of any new mining enterprises of note. It is said, however, that the downward trend of production has apparently been checked. In Utah expenses of mining, shipping, and smelting were excessive.

A BUG'S EYE VIEW OF WASHINGTON

By Ira L. Smith

STRAINING FORMS are bent in toil over the national legislative rock-pile these days and will continue to slave away until they have disposed of the husky jolt of hard work conjured up by the present whirly condition of things in these involved times.

It will take car-load lots of deliberation and action if the can is to be tied to the flock of problems that are sitting around, grinning sardonically at those who would fain prove their masters.

As usual, everything hinges on money.

The financial outlook of the world has been darker than a Zulu's nose for lo, these many moons. It is only natural that Uncle Sam, one of the leading citizens of this corner of the universe, scarcely should be able to see his hand in front of his phiz, what with the black blanket of perplexity draped the world over.

This country has more gold in its old sock than King Midas would have been able to set his claws upon had he lived to Methuselah's ripe old age and collected compound interest on his tax-free securities through all the nine centuries. Over on the other side of Mr. Atlantic's ocean, gold is so scarce that the European nations can't find it anywhere except in the thesaurus.

That's where all the rumpus is parked—right on the top of our pile of dirty lucre.

If some magician could graduate from the job of jerking white rabbits out of plug derbies, and land half of our gold stores over in Europe without knocking everything galley west in the doing, we'd wake up in the morning with few other problems than prohibition and the wife's millinery bill sitting crosswise in our minds.

But Yorick, old boy, that can't be done. Conditions have to get their noses pointed in the right direction by means of the rather toilsome and never too certain procedure of tacking words together to form laws.

So it comes that the twelve-cylinder minds of Congress are hopping like chameleons from one suggested remedy to another in their efforts to find a spot from which a bit of daylight will be visible through the haze.

Speaking of suggestions, there's a thick flock of them swirling around the foreign loan situation. This particular tangle seems to be honey for them. I've heard everybody but our elevator boy propound a choice idea on the subject, and only this morning I caught him with his chin at half-mast, looking as though he was about ready to make it unanimous by springing a happy solution.

This particular question, sitting link-armed with its half-brothers, foreign exchange and domestic revenues, has been baring its teeth to solution in a particularly vicious manner, getting away successfully with its defy. Congress must reach up into the air and grab off large chunks of authority for distribution in proper places if this mess is to be straightened out, say those who have flattened their ears to the ground.

Germany has a mortgage on the old homestead that has her close to the point of going over the hill to the poorhouse. She has already pawned the family heirlooms, according to her word, and unless Stinness, her wealthy son, saves the farm from the sheriff, there's no telling what will happen.

All this—and more—has to be taken into consideration by those who seek to take this country's financial situation out of the cocked hat into which it has been knocked through lack of European credits to provide the wherewithal for our commodities.

Bootblacks in Poland have to carry their small change around in five-ton trucks. It takes six wagon-loads of rubles to buy a cheese sandwich in Russia. A man's a tramp over in that league unless he has at least ten million of the local yen in his jeans. Directly the time will come when Congress will have to do its derndest toward helping these conditions do an about-face, through the application of judicious legislation on this side.

Then we have one of the finest puzzlers that ever acted as the inspiration of a Congressional debate — the framing of a new tariff act. In days of old when it was the common thing for men to be bold, outlining a tariff law amounted to little else than saying that foreign goods coming within the boundaries of our fair country should carry such and such a duty. Now, b'gosh, with the various foreign currencies worth less than the word of a fickle woman, this comparatively easy plan of operation doesn't fill the bill. In his address to Congress, the President offered the suggestion of a rubber-band tariff. It remains for the solons to put in a busy spasm figuring out who's going to do the stretching, how far and what on.

With the air being turned into a gooey consistency by the churning around of a multitude of vital issues, it is only natural that the grand old merchant marine boogey-boo should stretch its legs and yawn, thus causing shudders to zip across Washington hand in hand with the thoughts of having to deal with that veteran perplexity. It certainly does beat all the way passing days chuck things into new lights. There was the time, which even we who were in the kindergarten during the Spanish-American War can remember, when to let out a chirp about the United States subsidizing its merchant marine would have brought down the protests of all the landsmen, living and dead, who ever allowed a thought to perch on the subject for a restive moment. Not so at this time, however, when all hands are only too eager for the breath of life to be oozed into the idle ships that are doing little else than bob up and down like a fleet of corks, while foreign boats cop the trade.

The foregoing blurbs have hit the high spots of the knotty affairs with which our legislators must concern themselves if the poker which we hold in the international economic fire is not to become too blamed hot.

But that's not the half of it, Dearie!

Ponderous domestic issues parade themselves up and down the Congressional halls like so many circus elephants, ready to spout water through their trunks at any mere mortals who attempt to get acquainted with them. Worst of all, most of these animals seem to have some sort of distant relationship with the overseas nightmares.

Were some evolutionary cataclysm to sweep the combined ingenuity of the world's thousand best minds into one vast heap of gray-matter, that mastadonic thinking machine would have plenty to keep it busy for a long while if it sought to untangle every ravel in the mess which old man Mars dragged the world into when he decided to go on a rampage.

Small wonder, then, that right smart of the midnight oil is going to be burned during this session of Congress, and then some.

Pessimists should be shot on sight, however, because things must come up for air, sooner or later.

INTERNATIONAL EXPORT COAL RIVALRY CONTINUES ITS INTENSITY

THE INDUSTRIAL BATTLE in which coal exporters of the United States are pitted against those of Great Britain in efforts to hold permanent advantages in world markets continues in intensity, with determined efforts being made by the American producers to prevent additional encroachments such as the British began making early in December.

Much of the coal exported from the United Kingdom, especially the Cardiff fields, is now sold below f. o. b. costs, and it is highly improbable that the British can long continue to sell their export coal at present prices, says the Fuel Division of the Department of Commerce, basing its statement on evidence produced from British sources.

American coal exporters have a fair chance of getting a considerable share of the international coal business, says the Fuel Division, particularly if all the factors entering the American coal industry will get together on an efficient business basis.

Reported clearances of British coal cargoes from Bristol Channel alone during November and December indicate shipment of approximately 75,000 tons to the following points: San Francisco, San Diego, Cal.; Seattle, Wash.; Jamaica; Honolulu; Trinidad; Tampico; Saint Johns, New Foundland; Point a Pitre, French West Indies; Venezuela; Colon; Barbados; Demerara; Port of Spain; Guayaquil; Paramaribo, and Colon.

A striking feature is the reversal during the past year in export coal positions held by the United States and Great Britain as indicated by statistics comparing conditions in September, 1921, with those of a year before. In September, 1920, American exports were 4,336,658 tons, and British, 1,475,623 tons. In September this year American exports had dropped to 1,498,878 tons, while the British exports increased to 3,406,579 tons.

In addition, the capacity, both actual and potential, of British mines should draw closer to the 1913 level during the present year than they did during 1921, according to the opinion expressed by Henry C. Morris, chief of the Fuel Division, in his review of the situation. The British trade depression will probably keep the home demand down to 175,000,000 tons, leaving a sufficient export margin to meet demands from European and other countries up to the record figures of 1913.

Production in Great Britain is estimated at 160,000,000 tons for 1921, with exports for the first eleven months standing at 20,351,400, the estimate for the year being 24,000,000 tons. This includes the strike period when the industry was at a standstill. Foreign bunkers for the eleven months totaled 9,646,000 tons.

Seeking to gain a foundation upon which the American export coal trade may extend and safeguard its operations, the Department of Commerce has sent a questionnaire to American consuls and trade representatives abroad asking for information upon local conditions and outlining the type of information desired in the future.

One of the most comprehensive consular reports received by the department was placed before the public last week, when contents of the communication submitted by Trade Commissioner Alexander V. Dye, London, were made available.

The United Kingdom can not hope to hold a commanding position in the export coal industry unless it is able to halt the decreasing production per man in the British industry, according to Mr. Dye. "It is also clear," he continued, "that in the United Kingdom the curve of production per man must not turn upward sporadically but must definitely and persistently reverse the tendency of the past 40 years."

LIGNITE BRIQUETING RESULTS SATISFY EXPERTS

LIGNITE INVESTIGATIONS carried on during the past summer by the Bureau of Mines in its effort to render possible commercial development of the lignite deposits in North and South Dakota and Texas on a large scale have achieved satisfactory results, according to a report issued by the bureau.

The latest investigations, based upon data obtained during years of research by Dr. E. J. Babcock, dean of the mining engineering department of the University of North Dakota, have developed a carbonizer which has produced briquets of satisfactory quality which, while not entirely smokeless, held up nicely in the fire, burned evenly, and withstood severe tests.

The plan of the more recent work was to carbonize 1,000 tons of raw lignite by continuous operation of the carbonizer, briqueting the residue into a firm, solid fuel, and obtaining as much data as possible relating to the following:

Quality and quantity of gas obtained; quantity of gas required for carbonizing; behavior of lignite during processing; capacity of carbonizer; quantity and quality of residue obtained under various conditions; general analyses; binder requisites; character of briquets; control methods; cost of briqueted residue; quantity of by-products; design of suitable apparatus.

A complete report of the results obtained by the investigations is now being prepared by the cooperators who are working on the problems with the bureau's experts.

EXPORT COAL TRADE REVIEWED

AMERICAN COAL EXPORTS overseas in 1921, estimated at a figure in excess of 8,000,000 tons, show an increase of over 100 percent when compared with figures for 1913, according to a statement by the Fuel Division of the Bureau of Foreign and Domestic Commerce.

Attention is called to the fact that the increase represents overseas shipments only and that Canada and Mexico are not included. Much of this increase was doubtless due to the British coal strike, according to the fuel division.

Total exports of anthracite coal for 1921 were probably very slightly in excess of those for the pre-war year 1913, practically all of which went to Canada in both years.

Exports of bituminous coal, including shipments to Canada and Mexico, were 7 percent greater in 1921 than in 1913, the figures being approximately 20,690,000 tons for 1921, against 17,987,000 tons for 1913.

POTASH COMBINE ATTACKED AS ANTI-TRUST VIOLATION

CHARGING VIOLATION of all anti-dumping laws and American anti-trust statutes, Senator Smoot, Utah, has placed before the Senate Finance Committee a copy of a contract entered into by 34 American manufacturers of fertilizer and the German potash syndicate, taking the action during the course of hearings held on the tariff bill.

The contract, produced by S. D. Crenshaw, vice-president of the Virginia-Carolina Chemical Company, of Richmond, Va., provides that the American fertilizer manufacturers purchase 75 percent of their potash supplies from the German producers. It was shown, however, that the manufacturers could secure a lower rate per ton by securing their entire requirements from the Germans than by purchasing 25 percent of their needs elsewhere.

Reading the contract into the committee's record, Senator Smoot said that if the document was allowed to stand in force, "Germany will see that the potash industry of the United States will never be developed."

Mr. Crenshaw, whose firm is a party to the contract, appeared to oppose the proposed five-year tariff on potash. Answering this opposition, Senator Smoot stated that the potash resources of the United States were sufficient to meet domestic needs if Congress affords protection to aid development of the industry. German competition reentered the field against domestic potash producers following the war before the industry had a chance to gain the foothold necessary to low-cost operation.

Expressing to Senator Smoot appreciation by the Utah potash industry of his interest in the proposed tariff on potash, A. G. MacKenzie, secretary of the Utah Chapter of the American Mining Congress, said that the alleged agreement between distributors of German potash in this country had the result of practically extinguishing the potash industry in that state.

Potash from the mines left to Germany by the Treaty of Versailles is being exported in increasingly large quantities, although home consumption is decreasing. In 1920 the amount exported had risen to 230,000 tons from 180,000 tons in 1918, while the home market decreased from 850,000 tons in 1918 to 690,000 tons in 1920.

DEPLETION FACTS CITED BY SURVEY CHIEF

MEASURING THE RAPIDLY increasing drafts that are being made upon "our mineral balances in nature's treasury," Director George Otis Smith, of the Geological Survey, gave the following facts in an address delivered before the Council on Foreign Relations at its recent conference in New York.

"In the last 15 years we have mined and smelted more lead than in the nearly two centuries before; in the last thirteen years we have mined more coal and in the last 11 years more iron ore than in the whole of the century and more before; in the last 9 years more copper than in the 67 years before; and in the same 9 years more zinc than in the 54 years since zinc mining began in the United States.

"Most thought-provoking, however, is the fact that our country has produced more petroleum since the outbreak of the World War than in all the years before August, 1914. In terms of these seven and a half eventful years, American petroleum is truly a shrinking asset."

MAJORITY OF COAL MINE SCALES FOUND TO BE INACCURATE

A HIGH PERCENTAGE of coal mine scales are inaccurate in varying degrees, according to indications drawn from results of investigations made by the Bureau of Standards during the past year. Tests made of 231 scales showed 177 to be incorrect, according to the annual report of the director of the bureau.

"Good cooperation with the state officials in this work has been secured," says the report, "and it seems that the inspections being made will have the effect of materially improving weighing conditions throughout the territories investigated. As in the past, it is found, in general, that the tests and the results obtained therefrom do much to allay suspicion, quiet unrest, and increase industrial harmony."

It is felt that the number of incorrect scales, 77 percent of the total, indicates necessity of improvement of conditions, and this is emphasized by the size of the errors encountered, 57 percent of the incorrect scales being in error by more than 1 percent, and 7 percent being in error by more than 5 percent. The tolerance allowed on this class of scales is the same as that which has hitherto been permitted by the Bureau's examiners, namely, 0.4 percent, or twice the tolerance allowed on railroad track scales.

FUTURE UNITED STATES OIL SUPPLIES DEPEND UPON FORESIGHT

CONCISE OBSERVATIONS concerning the petroleum industry of the United States, embodying suggestions for future progress, are outlined by Ralph Arnold, consulting geologist and petroleum engineer of New York, in a letter to Representative Kissel, New York. Stating that his conclusions are based upon a study of conditions in Mexican oil fields, Mr. Arnold advances the following principles which he says must be observed if the future of the United States in relation to oil supplies is to be regarded:

That the United States must look to foreign countries for the gradually increasing percentage of its required oil. The United States is now importing over 100,000,000 barrels of crude oil annually.

That the United States Government must modify its laws or regulations to give its own nationals better treatment in operating on government lands before it can go to foreign countries and demand fair treatment.

That the government must foster cooperation among the oil companies engaged in foreign work and if necessary make additional modifications of its laws, looking toward this end, if the present laws do not legally permit of the required cooperation.

PETROLEUM EXPORTS INCREASE

HIGHLY PROPORTIONED INCREASES in the export petroleum trade of the United States since 1913 are indicated in a survey made by the Fuel Division of the Department of Commerce in reviewing the overseas business of the oil industry.

Exports of crude oil in 1921 approximate an increase of more than 190,000,000 gallons over 1913, with a corresponding increase in value of more than $16,000,000, announces the Fuel Division in estimating the export sales for the entire year on the basis of statistics available for the first eleven months.

The quantity and value of refined products for 1913 was 1,941,996,000 gallons, valued at $140,868,000, against about 2,411,000,000 gallons, valued at approximately $359,700,000 in 1921.

Woofing and Warping

III. Senator Oscar W. Underwood

A Series of Scrutinies Directed Toward Notable Legislative Personalities

By IRA L. SMITH

Senator Oscar W. Underwood

OSCAR W. UNDERWOOD, shepherd of the Senatorial Democrats, and possessor of one of the niftiest Congressional careers that ever jogged through the Capitol's corridors, is alleged to be the most composed creature that ever pulled on a shoe. Throughout thirty-two years spent in the legislative halls of the nation he has never mislaid his delicate poise.

If I believed this Indian hoakum about everybody having been something or another in ages gone by, I'd harbor a sneaking suspicion that the gentleman from Alabama used to be a celestial river that had at its disposal two-thirds of eternity in which to wend its serene and placid way across the breadth of the universe.

He does not come from the mould out of which the majority of Congressional leaders are cast. Instead of seizing upon each poor little opportunity that presents itself as a chance for a speech, he keeps his remarks tied up in the cellar until such time as he feels certain that they can get out and assert themselves to the best advantage.

It is this habit of staying as silent as a deaf and dumb asylum until the croocial moment arrives, coupled with his fourteen-carat personality, that has given him the leadership into which he has streaked through an even half-dozen years in the Senate.

He cut the eye-teeth of his career in the House, where he built up a record which stands as proof that you cannot keep frankness and cool, sound judgment out of the pasture of good things.

The strength of his character is mirrored in his position on party rule. Firmly devoted to his little friend, Party Organization, he quite frequently has forsaken her side when he saw Jennie Logicality beckoning to him from beyond the garden wall separating one political clan from the other. When the mule was rampant on the White House coat-of-arms—before the elephant gained that position—Mr. Underwood grabbed the bit in his teeth and differed with the head of the party on Panama tolls and other questions. He did this, however, only when his frankness and sense of the correct whispered the notion into his ear.

During recent days, since he took place as one of the quintette representing this country at the arms conference, he has been milling around in a mess of Chinese customs tariffs. They hooked him up with the committee handling this subject because his head is saturated with tariff dope, gained largely when he was chairman of the Ways and Means Committee over in the House.

When I take to raising children, as one of our best two-bit palmists has assured me I will, I am going to run a frieze around the top of the nursery wall composed of an endless succession of pictures of Oscar Underwood. Then, when the mildewed days of old age come charging along after the youngsters have soaked up the atmosphere of their early days, I'll have around me the most precise, exact, and level-headed set of offspring this side of Walla Walla.

LEAD AND ZINC PRODUCTIONS SHOW HEAVY DECLINES

HEAVY DECREASES in mine outputs of lead and zinc, and also in refinery production of the two metals, in 1921 are indicated in a preliminary statement by C. E. Siebenthal and A. Stoll, of the Geological Survey. Mine and smelter productions of lead each dropped 20 percent from the 1920 level, while zinc shows corresponding declines of nearly 60 percent.

Soft lead production by mines of the Mississippi Valley was about 231,000 short tons, and that of argentiferous lead by mines of the Western States was about 170,000 tons, a total of 401,000 tons. The corresponding figures for 1920 are 251,816 tons from the Mississippi Valley (including the small output of the Eastern States) and 259,070 tons from the Western States, a total of 512,865 tons. The Southeastern Missouri district made the largest output and was the only district to make a gain. Its output was 178,000 tons, as compared with 161,258 tons in 1920. The Coeur d'Alene district of Idaho came next, with about 96,000 tons, as against 118,105 tons in 1920. Utah made an output of about 45,000 tons, a decrease from 70,419 tons in 1920. The imports of lead in ore were about 7,000 tons, furnished chiefly by Canada, Mexico, and South America, and those of lead in bullion were about 41,000 tons, almost wholly from Mexico, as compared with a total of 62,796 tons in 1920. Lead content of lead ore in bonded warehouses on November 30 was 7,648 tons and of base bullion 16,207 tons, as against 16,462 and 34,758 tons, respectively, in 1920. Part of this lead, however, may have been smelted or refined but not shipped and thus may be included in smelter stocks.

Output of primary domestic desilverized lead in 1921 was about 190,000 short tons, of soft lead about 145,000 tons, and of desilverized soft lead about 55,000 tons, making a total output from domestic ores of about 390,000 tons of refined lead, as compared with 476,849 tons in 1920, which was made up of 220,327 tons of desilverized lead, 189,854 tons of soft lead, and 66,668 tons of desilverized soft lead. The output of lead smelted and refined from foreign ore and bullion was about 50,000 tons, as compared with 52,808 tons in 1920. The total lead smelted or refined in the United States was thus about 440,000 tons, as compared with 529,657 tons in 1920. The output of antimonial lead was about 8,000 tons, as against 12,535 tons in 1920.

Exports of lead of foreign origin were about 33,000 tons and of lead of domestic origin about 700 tons, as compared with 23,538 tons and 2,730 tons, respectively, in 1920, an increase of about 7,000 tons in the total exports.

Imports of refined pig lead, which for the years 1916 to 1919 inclusive had been a little over 5,000 tons a year and which had jumped in 1920 to 35,719 tons, maintained that high level in 1921, being about 32,000 tons. These heavy importations were the result of the relations of the New York and European prices and the rates of exchange.

Recoverable zinc content of ore mined in 1920 was about 250,000 tons, as compared with 584,772 tons in 1920 and 549,242 tons in 1919. The output of the Eastern States was about 68,000 tons, that of the Central States about 168,000 tons, and that of the Western States about 14,000 tons, as compared with 102,242, 337,652, and 144,878 tons, respectively, in 1920. The loss in output of the Eastern States was one-third, that of the Central States one-half, and that of the Western States over nine-tenths. The Upper Mississippi Valley region is credited with an output of about 4,000 tons and the Joplin district with an output of about 164,000 tons. Oklahoma made the largest output, about 116,000 tons, twice as large as that of any other state. In 1921 Montana (the Butte district almost wholly) apparently produced about 11,000 tons, as compared with 91,906 tons in that district in 1920.

The imports of zinc in ore decreased from 22,487 tons in 1920 to about 2,700 tons in 1921, most of which was imported from Mexico. The zinc content of zinc ore in bonded warehouses on November 30 was 14,292 tons, as compared with 25,650 tons at the end of 1920. Some of this ore may have been smelted but not shipped and thus may be included in smelter stocks.

The exports of zinc made from foreign ores were about 1,260 tons and those of zinc made from domestic ores were about 3,200 tons, as compared with exports of 28,368 and 85,898 tons, respectively, in 1920. The exports of domestic zinc included about 1,800 tons of sheet zinc, as against 11,852 tons in 1920. The stocks of zinc at smelters and in warehouses at the end of November was about 74,000 tons, as against 94,747 tons on June 30, 1921, and 71,037 tons at the end of 1920. The apparent consumption of primary zinc during 1921 was about 196,000 tons, as compared with 323,044 tons in 1920.

At the end of November 38,700 retorts were reported in operation out of a total of 150,462 retorts, as compared with 36,000 out of 123,528 on June 30, 1921, and with 56,197 out of 158,625 at the end of 1920. Advices late in December put the number of retorts expected to be in operation at the end of the year at about 41,500, or a little more than one-fourth of the total.

Output of primary metallic zinc from domestic ores in 1921 was about 194,000 tons and from foreign ores about 2,500 tons, a total of 196,500 tons, as compared with 450,045 tons from domestic ores and 13,332 tons from foreign ores, a total of 463,377 tons, in 1920. In addition to primary zinc there was an output of about 17,000 tons of redistilled secondary zinc, as compared with 21,371 tons in 1920, making a total supply of distilled zinc and electrolytic zinc in 1921 of 213,500 tons, of which 31,500 tons was high grade and intermediate, 32,000 tons select and brass special, and 150,000 tons prime western. The output of the corresponding grades in 1920 was 114,606, 59,811, and 310,331 tons, respectively, a total of 484,748 tons. Of the total output of primary zinc in 1921, about 48,000 tons was made in Illinois, as against 109,056 tons in 1920; 40,000 tons in Oklahoma, as against 110,500 tons, and 36,000 tons in Pennsylvania, as against 74,234 tons.

Imports of foreign slab zinc amounted to 6,674 tons, as compared with 15 tons in 1920. Of these imports England furnished 4,200 tons, Germany 1,456 tons, Netherlands 560 tons, and Belgium 452 tons.

It would be natural to suppose that zinc smelters, with Joplin concentrates selling for $20 a ton, would stock up fully. However, if the output of domestic primary zinc, 194,000 tons, is subtracted from the mine production of recoverable zinc, 250,000 tons, 56,000 tons is left to furnish the zinc content of pigments. But pigments made in 1920 contained 110,695 tons of zinc, and the output of pigments in 1921 was probably not greatly below that of 1920. Apparently, therefore, smelter stocks of concentrates were depleted rather than increased in 1921.

ALASKA'S MINING OUTPUT REDUCED GREATLY BY DEPRESSION

THE TIGHT GRIP in which stagnation held mining operations in Alaska during the past year is reflected in preliminary reports made by experts of the Geological Survey, showing a drop in production values from $23,303,757 in 1920 to $16,109,000 in 1921, when the lowest level of output since 1904 was touched.

The decrease during one year of over $7,000,000 in value of output was due to a decline in all forms of lode mining, especially that of copper. The output of the gold placers was somewhat larger than that of the preceding year, and a little progress was made in development of the coal fields.

Blame for the depression is not placed upon any local conditions by close observers of the situation, which is taken merely as a reflection of the subnormal position of the mining industry throughout the world.

The preliminary survey points out the following as dominant features of the past year's mining in the territory:

The decrease of both copper production and development, owing to the low price of the metal; the closing of the Perseverance mine, one of the three auriferous lode mines at Juneau; continuation of activity in auriferous quartz prospecting in the Sitka, Juneau, Salmon River, and Willow Creek districts; a revival of placer mining; continuation of systematic prospecting for coal in the Matanuska field by the Naval Coal Commission; the many examinations made in petroleum oil fields of Alaska by oil companies, with the purpose of drilling, and the discovery of a new locality of galena and other sulphide deposits in the Kantisha district.

Value of minerals produced in Alaska in 1920 and 1921:

	1920	1921
Gold	$ 8,365,560	$ 8,000,000
Copper	12,960,106	6,971,000
Silver	1,039,364	466,000
Lead	140,000	46,000
Platinum and allied metals	160,117	5,000
Tin	16,112	1,000
Coal	355,668	480,000
Petroleum, marble, gypsum, quicksilver, etc.	266,830	140,000
	$23,303,757	$16,109,000

Alaska placer mines produced gold to a value of about $4,090,000 in 1921 and $3,873,000 in 1920. This increase is to be credited chiefly to the Kuskokwin placer districts. At the end of 1921 the Alaska mines had produced a total of $328,000,000 worth of gold, of which $222,000,000 came from placer mines. A number of new finds of placer gold were made during 1921, but these were all in known fields of auriferous alluvium.

Returns on dredge production, especially from Seward Peninsula, are as yet very incomplete, but it appears that some 22 dredges were operated in 1921 and recovered about $1,500,000 worth of gold. In 1920 the same number of dredges produced gold to the value of $1,130,000. The total gold output of Alaska dredges since the beginning of this form of mining in 1903 is $23,000,000.

In 1921 the Alaska mines produced about 56,214,000 pounds of copper, valued at $6,971,000, as compared with 70,435,363 pounds, valued at $12,960,106, in 1920. The total Alaska copper output is now 672,000,000 pounds, valued at $135,000,000.

The Alaska mines produced about 742,000 ounces of silver in 1921 and 963,546 ounces in 1920. The silver was produced chiefly as an incident of gold and copper mining, and hence the output declined with that of these other metals. Some of the silver produced came from galena ores, of which about 450 tons was mined in 1921. The Alaska lead output, derived from gold and galena ores, was about 510 tons in 1921, as compared with 875 tons in 1920.

Owing to the low price of tin, the mining of that metal in Alaska almost ceased in 1921, and the total production is estimated to have been only about 1½ tons, as compared with 16 tons in 1920. No tin was shipped, and the output came chiefly from the Hot Springs district of the Tanana region, where it was recovered incidentally to gold-placer mining. No reports have been received of any mining during 1921 in the York district of Seward Peninsula, in the past the principal source of Alaska tin.

Work was suspended during 1921 at the Salt Chuck palladium-copper mine. As this property was the principal source of the platinum and allied metals produced in Alaska, the total output of these minerals was only about 65 ounces in 1921, as compared with 1,479 ounces in 1920. The platinum output in 1921 was all derived from gold-placer mining, mainly on Dime Creek on Seward Peninsula.

Two quicksilver properties were under development in Alaska during 1921—the Parks mine, on lower Kuskokwim River, and the Swift mine, 20 miles southwest of Iditarod. Some quicksilver was produced at the Swift mine. No antimony, tungsten, chromite, or molybdenite were mined in Alaska during 1921.

The question whether the deposits of high-grade bituminous coal in the Matanuska and Bering River fields contain a large tonnage of fuel available under the present high cost of recovery and with the present market is still unanswered.

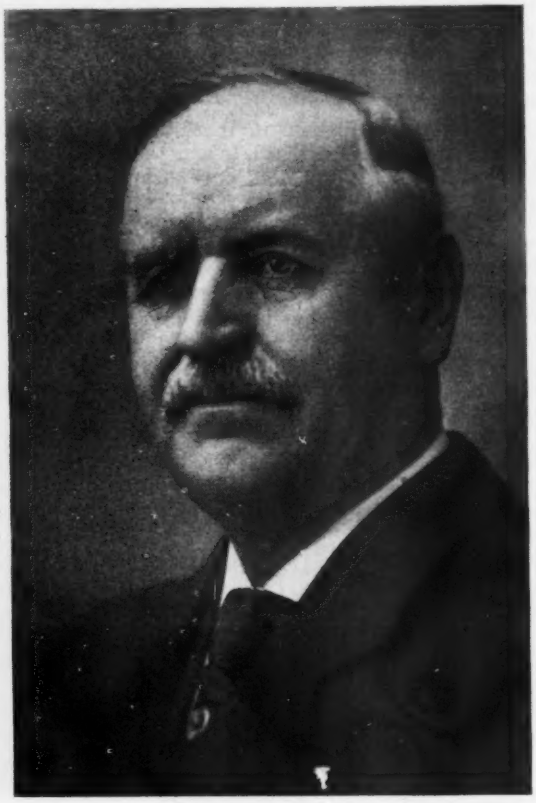
The output of Alaska coal was about 78,000 tons in 1921 and 61,111 tons in 1920. In 1921 about 58,000 tons came from the Matanuska field, principally from the Eska mine, operated by the Alaskan Engineering Commission to supply coal for the railroad. The Navy Coal Commission continued underground exploration for coal at Chickaloon and at Coal and Moose creeks, with fairly encouraging results.

The petroleum produced in Alaska in 1921, as in previous years, was derived from a single patented claim in the Katalla oil field. This property is owned by the Chilkat Oil Company, which uses its entire product in its own refinery. Except for the work done by this company, there was no drilling in the Alaska petroleum fields. The staking of Alaska oil claims began in 1920 and continued in 1921. Some claims are regions of known seepages and favorable structure and some are in wildcat territory, not uncommonly in areas where what is known of the geology is unfavorable to the occurrence of oil. Drilling in some of the Alaska oil fields will no doubt be undertaken in 1922.

Marble quarrying and gypsum mining continued in southeastern Alaska in 1921. The marble output was smaller, but there was a considerable increase in the gypsum output over that of 1920. Sulphur mining continued on Akun Island, at the east end of the Aleutian chain, but no sulphur was shipped.

JOHN DERN, FORMER PRESIDENT OF A. M. C., SUCCUMBS

JOHN DERN, veteran mining man and former president of the American Mining Congress, died January 2 at his home in Salt Lake City, following an attack of heart failure. Mr. Dern's condition had been critical since Thanksgiving Day when shortly after he completed his twenty-first transatlantic voyage in re-



JOHN DERN

turning from a visit to Germany, his native country, a previous attack caused his collapse.

For more than a quarter of a century Mr. Dern, who was 71 years of age at his death, stood as a prominent figure in the mining industry, holding at the same time a commanding position in Utah's political and commercial affairs.

Leaving Germany when only 15 years of age, he received his education in the schools of Illinois. He went to Fremont, Neb., shortly after completion of the Union Pacific railroad through that state, where he was successful as a farmer and banker.

With other Nebraskans he became interested in the Mercur Gold Mining and Milling Company which, although possessing unusually rich gold ore, was a losing venture due to inability to obtain any large extractions of the rare metal. Later the company was consolidated with the De La Mar Mercur Mines Company, under the name of the Consolidated Mercur Gold Mines Company, and the cyanide process, discovered about that time, put in operation. It was under Mr. Dern's management that the Consolidated Mercur Gold Mines Company was developed into a bonanza and paid millions of dollars in dividends. His mining interests were extensive, his investments in the Tintic district being very heavy. For many years he was president of the Uncle Sam Consolidated Mining Company at Tintic; vice-president and manager of the Lower Mammoth Mining Company of the same district, and president of the May Day Mining Company. Also he was a director and heavy stockholder in many other mining properties in other Utah districts and in Nevada.

Mr. Dern was born October 24, 1850, at Haussen by Giessen, Oberhessen, Germany, where the Dern family figured prominently for more than 200 years. His grandfather was mayor at Haussen for more than twenty-five years and other members of the family held high office there.

U. S. OIL RESERVES ESTIMATED AT NINE BILLION DOLLARS

ESTIMATES PLACING the underground oil reserves of the United States on January 1, 1922, at 9,000,000,000 barrels recoverable by present methods have been announced as the result of an exhaustive review made by a joint committee composed of members of the American Association of Petroleum Geologists and of the United States Geological Survey. These estimated reserves are only enough to satisfy the present requirements of this country for twenty years, providing the oil can be taken out of the ground as fast as it is needed. However, this amount of oil will not have been discovered, much less taken from the ground, within the next twenty years, and the dependence of the United States upon foreign fields and distillation of artificial petroleum from shales and coals, or discovery of a substitute for petroleum, is increased accordingly, says the committee's report.

ESTIMATED OIL RESERVES.

	Millions of Barrels
New York	100
Pennslyvania	260
West Virginia	200
Ohio	190
Indiana and Michigan	70
Illinois	440
Kentucky, Tennessee, Northern Alabama, and Northeastern Mississippi	175
Missouri, Iowa, North Dakota, Wisconsin and Minnesota	40
Kansas	425
Oklahoma	1,340
Northern Louisiana and Arkansas	525
Texas, except Gulf Coast	670
Gulf Coast, Texas, and Louisiana	2,100
Colorado, New Mexico, and Arizona	50
Wyoming	525
Montana, Nebraska, and South Dakota	100
Utah, Nevada, Oregon, Washington, and Idaho	80
California	1,850
Eastern Gulf Coastal Plain and Atlantic Coast States	10
	9,150

"In the light of these estimates as to the extent of our oil supplies," the committee points out, "it is the stern obligation of the citizen, the producer, and the government to give most serious study to the more complete extraction of the oil from the ground, as well as to the avoidance of waste, either through direct losses or through misuse of crude oil or its products."

COAL STRIKES OF TWENTY YEARS CARRY HEAVY ECONOMIC LOSSES

STARTLING COSTS ENTAILED in days of labor lost to the coal mining industry through labor strikes are indicated in tables prepared by the Geological Survey, summarizing these economic losses during the twenty-year period, 1899-1919, for the entire country, and for the various states during 1918 and 1919.

An average of 35 days per man was lost to the industry during 1919 as a result of strikes involving 446,436 men during a total of 15,803,567 days. In only three other years during the twenty-year period did these losses reach higher levels, the figures being exceeded in 1910, 1906 and 1902.

Detailed tables follow:

SUMMARY OF LABOR STRIKES IN U. S. COAL MINES, 1899-1919

(Includes both anthracite and bituminous coal)

Year	Total workings days lost	Av. No. of days lost per man striking	Year	Total workings days lost	Av. No. of days lost per man striking
1899	2,124,154	46	1910	19,250,524	88
1900	4,878,102	37	1911	983,737	24
1901	733,802	35	1912	12,527,305	40
1902	16,672,217	83	1913	3,049,412	23
1903	1,341,031	28	1914	11,013,667	68
1904	3,382,830	44	1915	2,467,431	37
1905	796,735	21	1916	3,344,586	20
1906	19,201,348	52	1917	2,348,399	15
1907a	462,392	14	1918	508,526	6
1908a	5,449,938	38	1919	15,603,567	35
1909	731,650	29			

(a) No strikes of consequence occurred in the anthracite region in these years.

LABOR STRIKES IN U. S. COAL MINES, 1918-1919; BY STATES

State	1918 Total days lost	1918 Av. No. of days lost per man striking	1919 Total days lost	1919 Av. No. of days lost per man striking
Alabama	3,259	2	269,242	20
Arkansas	4,292	4	161,069	44
Colorado	2,318	5	89,392	14
Georgia	1,610	7	2,016	12
Illinois	74,850	7	3,558,094	44
Indiana	51,015	6	1,135,013	40
Iowa	4,774	5	433,884	38
Kansas	25,047	5	531,791	58
Kentucky	15,318	12	696,165	31
Maryland	5,402	2	143,523	27
Michigan	18,194	13	153,351	73
Missouri	5,800	5	458,588	55
Montana	218	1	153,159	40
New Mexico	.....	.	18,307	15
North Dakota	166	8	4,281	7
Ohio	44,837	9	1,717,426	40
Oklahoma	12,294	20	317,538	40
Pennsylvania (bit.)	112,929	9	3,765,144	39
Tennessee	2,454	3	334,315	33
Texas	550	10	52,858	30
Utah	30	1	4,866	15
Virginia	10,241	20	22,956	24
Washington	1,275	17	186,942	42
West Virginia	42,009	7	1,158,094	24
Total bituminous	438,882	7	15,368,014	37
Pennsylvania (anthra.)	69,644	4	235,553	7

COAL PRODUCTION IN 1921 FAR BELOW NORMAL

OUTLINING IN PRELIMINARY production reports the prostration experienced by the coal and coke industries during 1921, the Geological Survey says that the completeness of the past year's depression cannot be matched by conditions at any time since 1893, if the normal increase rate is taken into account in comparing the 1921 figures with those of previous years.

To secure a parallel of the 407,000,000 tons of soft coal produced during the past year, it is necessary to go back ten years in the records of annual outputs. Almost 20 years have elapsed since the annual coke production was as low as the 1921 total of 26,000,000 tons.

Anthracite production stands in contrast to general conditions within the industry, however, the output of 88,000,000 tons being close to the figures of the previous two years.

The average bituminous output per working day in 1921, according to the preliminary estimates, was 1,326,000, a decrease from 1,805,000 tons in 1920, and 1,515,000 tons in 1919.

Production of all coal for the year just closed is estimated at 495,000,000, a decrease from 646,000,000 tons in 1920.

The following table compares the 1921 production of both anthracite and bituminous coal with the output in the ten years preceding. The figures are expressed in million net tons.

	Anthracite	Bituminous	All coal
1911	90	406	496
1912	84	450	534
1913	92	478	570
1914	91	423	514
1915	89	443	532
1916	88	503	591
1917	100a	552	652
1918	99a	579	678
1919	88	466 (Strike)	554
1920	89	557	646
1921	88	407	495

(a) Years of large washery production.

COOPERATIVE AGREEMENTS TO AID LIQUID OXYGEN STUDIES

SUBJECTION OF LIQUID oxygen explosives to commercial tests to determine their efficiency and practicability under working conditions similar to those encountered in the mining industry is planned in a cooperative agreement tentatively made by the Bureau of Mines with a manufacturer.

Doubt of the practicality of liquid oxygen as a substitute for dynamite in mining operations has prevented firms in the United States from undertaking the manufacture of liquefying machinery. This same factor has discouraged importations of German machinery.

Possibilities of utilization of liquid oxygen as a commercial explosive for use at times when cost of dynamite runs high, and under other favorable conditions, have prompted the Bureau of Mines to continue its intensive studies of the subject, results of which will appear in a report soon to be issued.

ONE OF THE most important subjects of interest to the mining industry coming up for early attention is the Fordney Tariff Bill. It is expected that the measure will be reported from the Senate Finance Committee at a very early date. The appropriation bills for the support of the government during the year beginning July 1 will have right of way but it is expected that the Tariff Bill will be pushed through as rapidly as it is possible.

Consideration of the Mines Revision Bill by the House Mines and Mining Committee has been deferred until Secretary Fall returns to the city and gives his views thereon. In another part of this issue is an article giving the present status of this legislation.

The committees which are considering the subject of a national blue sky law expect that some time during the session the matter will be taken up vigorously. The measures in which the mining industry is particularly interested are the Volstead Bill and the Denison Bill.

Many amendments have been made to the Revenue Bill. The House Ways and Means Committee has given hearings on proposed constitutional amendments to tax government, state and county securities which are now tax free. Representative Volk, of New York, introduced a sales tax bill imposing 1½ percent on sales and deliveries by manufacturers or producers, wholesalers and jobbers; 2½ percent on goods imported by manufacturers, etc., 3 percent on sales and deliveries by manufacturers to retailers or consumers; 4 percent on imports by retailers or consumers; 2 percent on sales and deliveries of lumber by manufacturers and 3 percent on importations of lumber, but no tax on resale of lumber; ½ percent on gross receipts of land and water transportation companies and public and private service utilities companies. It is provided that the tax shall not apply to the following, in addition to food products: sales and importations of ores or metal of all kinds; fuel of all kinds; gold and silver in ingots, bars, etc., or plates unmanufactured; U. S. coin and foreign gold coin; materials for use in construction, equipment and repair of ships. The bill also gives the Secretary of the Treasury authority to add to the exemption list.

Representative Bacharach has introduced a bill imposing a tax of 3 cents per gallon on sales and deliveries by manufacturers and producers of gasoline, the proceeds to pay for the soldier's bonus. He estimates that this tax will yield approximately $250,000,000 yearly.

The bill for the reorganization of government departments, with a view to reducing expenses and the preventing of duplication, will be considered at an early date as it is understood that the Congressional committee, which has been investigating governmental conditions, will make its report at a very early date.

Very little legislation has been completed since our last issue. The President signed the bill authorizing the Interior Department to grant extensions of time under oil and gas permits where, because of inability to secure machinery and for other causes, the permittees have been unable to drill wells as required by the leasing law. The Senate has passed the bill to permit agricultural entries on coal lands in Alaska.

Senator Pittman has introduced a resolution extending for two years the time to drill wells under the oil and gas provisions of the Leasing Law.

Senator France, of Maryland, has introduced a resolution authorizing the President to invite all nations of the world to participate in an international economic conference to be held in Washington in March for a discussion of the economic problems and matters of international finance and debts of the various nations.

The following bills of importance to the industry have been introduced:

REVENUE

H. R. 7456. Proposed by Mr. Smoot. (Amendment to Revenue Bill.) This amendment provides that whenever imported merchandise is subject to an ad valorem rate of duty, the duty shall be assessed upon the actual market value or wholesale price at the time of exportation in the principal market or markets of the United States. If there be used for covering or holding imported merchandise, whether dutiable or free, any unusual material designed for use otherwise than in the bona fide transportation of such merchandise additional duty shall be levied and collected at the rate to which the same would be subjected if imported. The amendment provides that no pretended sale or sales shall establish value, wholesale market value, or wholesale prices and that to constitute any such, having regard to the customs and usages of trade, there must be a reasonably extended course of sales or offers for sale in usual wholesale quantities to all purchasers on equal terms under like conditions.

H. R. 7456. Proposed by Mr. Smoot. (Amendment to Revenue Bill.) The bill proposes that when in his judgment the public welfare may require, the President shall direct that investigation be made to ascertain differences in conditions of competition in trade of such or similar articles in the United States and competing foreign countries which will enable him to find what rate of duty upon imported merchandise will equalize any such differences found to exist in favor of foreign producers in marketing such articles in the United States. The investigation will take into account the prices at which similar articles are sold in the United States and competing foreign countries, wages, prices of materials, and other costs of production. If the President shall find that the duties fixed do not equalize such differences in conditions of competition in trade of such or similar articles in the United States and competing foreign countries, he may proclaim any changes in classifications provided for in this Act or such increases or decreases in any rate of duty as he shall determine will equalize such differences. It also provides that if the President shall find that by reason of the depreciation of foreign currency or by reason of uncertain conditions in the market of the country of origin of any article the value is not a certain basis for

IMPORTANT BILLS REVIEWED IN THIS ISSUE

REVENUE—
H. R. 7456: Introduced by Mr. Smoot. (Amendment to Revenue Bill)
S. 2901: Introduced by Mr. LaFollette. (Estate Tax)

LABOR—
S. 2749: Introduced by Mr. Kenyon. (Prevention Unemployment)

GOVERNMENT DEPARTMENTS—
S. 2878: Introduced by Mr. Capper. (Consolidation various departments)
H. R. 9599: Introduced by Mr. Tincher. (Consolidation various departments)
H. R. 9598: Introduced by Mr. Curry. (Consolidation, redistribution departments dealing with Alaska)

OIL—
H. R. 8344: Introduced by Mr. Sinnott. (Extension of time oil and gas permits, Public Law No. 127)

PUBLIC LANDS—
S. J. Res. 147: Introduced by Mr. Pittman. (Extension time drilling oil and gas)

INTERNATIONAL ECONOMIC CONFERENCE—
S. J. Res. 150: Introduced by Mr. France. (International finance, war debts)

the assessment of duties, he may direct and proclaim that any ad valorem duty or any duty based in whole or in part on value levied upon such article shall be assessed upon the wholesale selling price of such articles in the principal markets of the United States at the time of exportation of the imported merchandise. Thirty days after the date of such proclamation such changes in classification or in the basis of the assessment of duties shall take effect. The total increase or decrease of such duties shall not exceed 50 percent of duties fixed in this Act until further provided by law and the President may at any time by proclamation modify or revoke any prior proclamation in whole or in part. It is also provided that no proclamation shall be issued until reasonable opportunity be afforded to hear persons directly interested in the production and distribution of articles. Section 2 provides that in the case of merchandise which is imported from a country whose currency has depreciated more than 5 percent from the value of the pure metal of its standard coin, if the President shall find that competitive advantages are accruing to producers in such countries because of this depreciation he shall determine the duties or variations in duties which will equalize such competitive advantages and shall proclaim a list of products thus affected and such respective equalizing duties applicable thereto. Section 3 provides that unfair methods of competition and unfair acts in the importation of merchandise into the United States, or in its sale by the owner, importer, etc., the effect or tendency of which is to destroy or injure an industry, efficiently and economically operated in the United States are declared unlawful and when found to exist by the President shall be dealt with, in addition to any other provisions of law, as hereinafter provided. The President or an independent establishment of the government authorized by the President shall make investigation and its final findings shall be transmitted with the record to the President, who shall determine the rate of additional duty not exceeding 50 percent, nor less than 10 percent of the value of the merchandise. If the President shall conclude that these unfair methods are extreme in their tendency he may exclude such merchandise from entry. The President is given authority to, by proclamation, specify and declare new or additional duties upon the products of any country when he shall find that such entry imposes, directly or indirectly, upon the disposition or transportation in transit any unreasonable charge, regulation, or limitation which is not equally enforced upon the like products of any foreign country or which imposes directly or indirectly upon the importation from the United States of any article not produced in the United States any customs, tonnage, or port duty which is not equally enforced upon importation from every foreign country of the like article which discriminates against the commerce of the United States, etc. The President of the United States and the Secretary of the Treasury are given full authority to investigate the subject of exports and imports and provisions are made for the protection of this country.

S. 2901. Introduced by Mr. LaFollette; referred to the Committee on Finance. (An estate tax.) This bill provides that in lieu of the tax imposed by Title IV of the Revenue bill an estate tax be provided which begins at one percent of the amount of net estate not to exceed $50,000 up to and including 50 percent of the amount by which the net estate exceeds $30,000,000. The tax is graduated and covers all amounts from $50,000 to $30,000,000.

LABOR

S. 2749. Introduced by Mr. Kenyon; referred to the Committee on Education and Labor. This bill has been reported from committee without amendment and is designated to prepare for future periods of depression and unemployment by systems of public works and provides that the head of each executive department is authorized to prepare and periodically revise the necessary plans for all public works and projects within his jurisdiction and to make the surveys and prepare the engineering plans necessary for proposed public works and projects in order that the work may be commenced immediately and properly prosecuted when an appropriation becomes available therefor; that the Secretary of Commerce shall prepare and publish monthly reports as a supplement to the Current Survey of Business of the Bureau of the Census concerning the trend of conditions, the approach of periods of business strain and overextension, or of periods of business depression in order that the President, the heads of the executive departments, the Congress, the Governors of states, mayors of cities, etc., may properly prepare for and plan against such periods. The Secretary of Commerce is authorized to utilize the available statistics collected by any department or agency of the Federal Government or of a state or by an industrial, banking, labor, or other association, and he is authorized to obtain such additional facts and statistics as may be necessary to carry out the provisions of this section. The head of each department is authorized to postpone the date of the commencement or retard the prosecution of such portions of the public works and projects within his jurisdiction in order to prepare for and to prevent a further rise in the wave of industrial expansion and resulting business strain and overextension.

GOVERNMENT DEPARTMENTS

S. 2878. Introduced by Mr. Capper; referred to the Committee on Agriculture and Forestry. The bill proposes the transfer of the powers now vested in the

Secretary of the Interior, the Commissioner of the General Land Office, the Director of the National Parks, the Director of the Reclamation Service, and the Commissioner of Indian Affairs, and the Bureau of Fisheries to the Department of Agriculture. A similar bill was introduced in the House by Mr. Tincher, H. R. 9599.

H. R. 9598. Introduced by Mr. Curry; referred to the Committee on Territories. This bill provides for the consolidation or a redistribution of the powers and duties of certain executive departments of the government of the United States relating to the Territory of Alaska. Under the Act there would be transferred to the Secretary of the Interior the functions now vested in the Department of Agriculture, relating to national forest reservations, any reservation or withdrawal for a ranger station and any forest lands on any light house or other reservation in the Territory of Alaska. Any function with respect to water resources, water-power interests, etc.; any function vested in the Department of Commerce with respect to Alaskan natives; any function conferred upon the Secretary of War with respect to the Board of Road Commissioners. The bill also provides that the Board of Road Commissioners for Alaska is authorized to receive from the Territory or other sources such funds as may be contributed thereby, to be expended in connection with money obtained from the Alaska fund or appropriated by the United States for the work of construction, repair, or maintenance of roads, tramways, trails, bridges, ferries, and related works in the Territory. All money heretofore or hereafter becoming available for the construction or maintenance of roads or trails in any parts of the Territory of Alaska shall be expended under the direction of the Secretary of the Interior by the Board of Road Commissioners for Alaska without any restrictions as to the expenditures in certain areas.

PUBLIC LANDS

S. J. Res. 147. Introduced by Mr. Pittman; referred to the Committee on Public Lands and Surveys. The resolution authorizes the Secretary of the Interior, under such necessary and proper rules and regulations as he may prescribe, to extend the time wherein a permittee is required to begin drilling operations, or the time wherein he is to drill one or more wells for oil or gas to a depth of 500 feet each, or the time within which he is to drill to an aggregate depth of not less than 2,000 feet, provided that the Secretary of the Interior finds that the permittee has been unable, with the exercise of diligence, to perform such acts and that the time within which such acts shall be performed shall not be extended for a longer period than two years.

OIL

H. R. 8344. Introduced by Mr. Sinnott. This bill, which authorizes the Secretary of the Interior to grant extensions of time under oil and gas permits, was reviewed in the January issue of the JOURNAL. The President has signed this bill and it is now Public Law No. 127.

INTERNATIONAL ECONOMIC CONFERENCE

S. J. Res. 150. Introduced by Mr. France; referred to the Committee on Foreign Relations. (Calling of International Economic Conference.) This resolution proposes the calling by the President of an international economic conference for the discussion of the economic problems and questions of international finance, particularly the problem created by the outstanding obligations between certain of the nations, as the result of the World War. The resolution suggests that this conference take place in Washington on a date in March, 1922, and the following countries are to be invited to participate: Argentine Republic, Australia, Austria, Belgium, Bolivia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Cuba, Czechoslovakia, Denmark, Dominican Republic, Ecuador, Finland, France, Germany, Great Britain, Greece, Guatemala, Haiti, Hejaz, Hungary, India, Ireland, Italy, Japan, Luxemburg, Netherlands, New Zealand, Nicaragua, Norway, Panama, Persia, Peru, Poland, Portugal, Rumania, Russia, Salvador, Serbia, Siam, South Africa, Spain, Sweden, Switzerland, Turkey, Uruguay, Venezuela, and Jugoslavia. The invitations shall expressly state that the motive of the United States in issuing them is to initiate and bring about a concert of action between the nations for the common solution for the general welfare of the grave financial economic industrial, and commercial, international problems growing out of the war. The sum of $100,000 is appropriated for carrying out the provisions of the Act.

C. E. ALLEN HONORED BY UTAH CHAPTER

CLARENCE E. ALLEN, of Utah, Intermountain General Manager for the United States Smelting, Refining and Mining Company and former congressman, retired from active service January 1 after forty years' activity in western mining. Mr. Allen was unanimously elected as the first honorary member of the Utah Chapter at a meeting held December 15. He has been prominent in public affairs as well as in mining, was a member of the Utah Territorial Legislature several times and was the state's first representative in Congress. D. D. Muir, Jr., formerly manager of mines for the United States Company, succeeds Mr. Allen as general manager.

Mr. Allen has extensive private interests to which he will devote his time in future. He will continue his residence at Salt Lake City. He is a charter member of the Utah Chapter, American Mining Congress, has been a director since its organization and is at present its second vice-governor.

HELIUM STORAGE STUDIES

PRACTICALITY of storage of helium in coal, metal, and salt mines is being investigated by the Bureau of Mines, experts having already completed a series of field investigations on the subject. An experimental chamber has been prepared for studies of this nature at the bureau's experimental coal mine at Bruceton, Pa.

Investigative work on helium recently conducted by the bureau may be classified under the following heads:

Helium production at Petrolia, Texas; investigation of known and of probable areas of helium-bearing gas; helium storage; helium repurification after use in balloons; and investigations of gases and liquids at low temperatures, with particular reference to obtaining data for use in perfecting methods of separating helium from natural gas by progressive selective liquefaction.

CARBON MONOXIDE STUDIES

CARBON MONOXIDE poisoning, encountered through inhalation of the gas following shot firing, mine explosions, or mine fires, and one of the most frequent causes of industrial accidents, is the subject of a comprehensive report issued by the Bureau of Mines, incorporating details of methods used in treatment of cases.

While there appears to be no uniform method of treating cases of carbon monoxide poisoning, despite its common occurrence, the bureau has developed a treatment which has been supported by laboratory investigation.

SURVEY REPORTS.—The Geological Survey has issued the following reports: Gold, silver, copper, lead and zinc in Idaho, Washington, and Montana in 1920; zinc in 1920; manganese and manganiferous ores in 1920; gems and precious stones in 1920; oil and gas prospects in Jefferson County, Okla.; lignite in the western part of the Ft. Berthold Indian Reservation south of the Missouri River in North Dakota; oil and gas prospects in Montana, North Dakota, and South Dakota.

REDUCTION OF COAL RATES OPPOSED BY RAILROAD MANAGERS

By C. H. Farrell

A TEN PERCENT reduction in the rates on coal will reduce the revenues of the Baltimore & Ohio Railroad from that source by $6,000,000, according to a statement made by Mr. Daniel Willard, president of the Baltimore & Ohio, at the general rate inquiry before the Interstate Commerce Commission, which was resumed on January 11. In order to make up that amount of money out of reduced rates it would be necessary for his road to handle 20 percent more tonnage or else accept a reduction in net operating income. Mr. Willard stated that his road did not have the facilities and could not handle that increased tonnage if it were offered, and that therefore a 10 percent reduction would mean that the road would be unable to earn as much money at a reduced rate, even if that rate did succeed in stimulating tonnage to the extent indicated.

This just about illustrates the attitude of railroad managers toward any general reduction in rates at this time. At the December hearing it was stated as the belief of every witness, and those who have testified since the holiday recess are of the same opinion, namely, that a reduction in rates probably would not stimulate traffic sufficiently to make up for the consequent loss in revenue.

Mr. Willard filed an exhibit with the Commission indicating that his road handled about 38,000,000 tons of coal and coke in 1921, which was 52.6 per cent of the total tonnage of his line and accounted for 34.7 per cent of the total freight revenue. For the United States coal and coke represents 40.6 per cent of the entire tonnage transported. It is estimated that a reduction of 10 percent in bituminous coal rates would reduce the gross revenue and correspondingly lower the net revenue of the eastern carriers by $49,323,000, or 21.5 percent, and that to meet such a loss in net revenue the production and movement of an additional tonnage of 46,000,000 tons in the eastern district would be necessary.

"I do not think the best interest of the public would be promoted at this time by action of any kind which would tend to immediately reduce revenues of the carriers. Rates will eventually come down, but to unduly hasten the movement would, in my opinion, be unwise and would not tend to promote the larger public interest," said Mr. Willard in concluding his statement to the Commission, which can be taken as the attitude of all executives toward any immediate reduction in rates. Mr. Willard reviewed the railroad situation beginning with the pre-war years and coming down through Federal control to the present time. Referring to the testimony previously given by Mr. Shriver, to the effect that if the carriers in the eastern region were to do over again the identical business that was done during the twelve months ended October 31 upon a basis of rates and costs for the entire period such as was actually in effect on November 1, the estimated net result would be a return of approximately 5.4 percent on the property used, Mr. Willard said that he considered the estimate a very liberal one and one that might not be fully realized, but even if it were possible of realization it would not justify an immediate reduction in rates. The reason for this conclusion he explained to be that the results accomplished by the carriers in the past few months have been possible of attainment only by forced economies that are neither in the public interest nor possible of indefinite duration. He then called attention to the various maintenance items in which the carriers had failed to keep pace with the work done during the years of the test period, which he explained was no greater than it should have been. The fact that the number of bad order freight cars on November 1 upon his own line, which is perhaps in better shape than the lines as a whole, was much in excess of what the carriers consider a normal condition, was attributed simply to deferred maintenance and referred to as a condition which could not be indefinitely continued.

Referring to business conditions Mr. Willard stated that he was unable at the moment to find any substantial reasons for assuming that the business which the carriers will be offered during the coming year is likely to be greater than the business handled during the year just ended, although of course "I am hoping that this year may show at least the beginning of a revival in business. My opinion is that it would be decidedly unsafe at this time to base any conclusions for the immediate future upon an expected increase in business which may not materialize."

As to rate reductions, he stated that the business of 1921 done over again at present rates would produce $100,000,000 less than it would on the basis of rates in effect a year ago. Since the advances made by the Commission in August, 1920, the Baltimore & Ohio Railroad Company alone has made rate reductions which reduce its net revenue by $6,500,000 per annum on a volume of business equal to the amount handled during the calendar year of 1921.

In Mr. Willard's opinion the decline in commodity prices during the past year will not be felt immediately by the railroads, because most supplies are bought months ahead. The standard track tie is an example. A year ago roads in eastern region were paying an average of $1.65 per tie, and this same tie can be bought today for $1.10. The Baltimore & Ohio Railroad has $2,500,000 ties on hand, which is the number required for a year's maintenance. Consequently the reduced price on ties will not benefit the Baltimore & Ohio Railroad until

1923, although they are buying next year's supply at present figures.

"Railroad rates are now and always have been subject to certain fundamental economic laws against which they cannot prevail, and the mere operation of such laws and influences will tend constantly to bring about lower rates just as has been the case not only during the last year but during all the years of railroad operation." This statement was made by Mr. Willard in discussing present rates and the relief to be expected in the future, and led him to the conclusion that any movement which would accelerate the downward trend of rates at this time would be injurious to the railroads and of no benefit to the public.

Passing on to the question of economies, Mr. Willard stated as his belief that the only economies of importance which can be effected must be made through new facilities, which, in turn, require the expenditure of new capital. As an example he cited again the Baltimore & Ohio Railroad, where they are operating at the present time on several hundred miles of line a large number of small locomotives, which are not as economical as the large locomotives, of which the company has several laid up and in first class condition. These larger ones cannot be operated on this portion of the line because of the bridges, and to replace same would cost, at present prices, more than $8,000,000. Mr. Willard expressed himself as not desiring to minimize the possibilities of economy in various small ways and with facilities as they already are, but he seems confident that the economies which will "have a real and controlling influence on the situation can only be made effective by expenditure of large sums of new capital, and the railroads as a whole are not in a position to make such expenditure at the present time." In concluding he stated that it was his judgment that not less than 6 percent would, under conditions now existing, constitute a fair return on the property of the railroads after March 1 of this year.

Various other witnesses have been called by the carriers and detailed exhibits showing the financial condition of all roads have been duly filed, but the opinions expressed by the witnesses, whether executives, accountants, or traffic men, have all been to the same general effect, that the carriers cannot at the present time make a general reduction without sacrificing either the maintenance of the properties or the return upon investment to which they believe they are entitled.

NATURAL-GAS GASOLINE SHOWS INCREASE

NATURAL-GAS GASOLINE production continued to increase in 1920 and exceeded that made in 1919 by 31,776,791 gallons, or 9 percent, as compared with an increase of 24 percent in 1919, according to E. G. Sievers, of the United States Geological Survey, Department of the Interior. The figures for 1920, however, are subject to revision. The average daily production of natural-gas gasoline in 1920 was 1,050,170 gallons, as compared with 963,110 gallons in 1919.

The value of the total output of natural-gas gasoline in 1920, as computed from the prices received at the plants, increased $7,337,355. The value of the gasoline produced by the compression method increased $4,509,541 and that produced by the absorption method increased $2,827,815. The average price was approximately the same in 1920 as in 1919—18 cents a gallon for the total output, 17½ cents for compression gasoline, and 20½ cents for absorption gasoline.

LEAD ROOF BECOMES VAGRANT

LEAD of too extreme purity will "wander" when used for roofing purposes. This is the verdict of metallurgists of the Bureau of Standards who recently were called upon to investigate the mysterious case of the lead roof of the new Episcopal Cathedral of Washington, D. C.

Lead had been specified as roofing material by the architects of the new structure because its color blended so well with that of the stone used in the building. After the sheet lead had been in place for a short time, however, bewildered eyes were rubbed when it was discovered that the roof was slipping.

It was then that the technical experts were summoned. They declared the quality of commercial lead used on the job was far too fine, being 99.9 percent pure, and made the recommendation that "hard lead," containing approximately six percent antimony, be substituted.

MINERS' ALMANAC ISSUED

THE MINERS' SAFETY and Health Almanac for 1922 has been issued by the Bureau of Mines in cooperation with the Public Health Service. Intended for circulation among the million coal and metal miners and quarry workers in the United States, it contains many articles on safety, health and sanitation subjects, prepared by experts of the cooperating agencies. The usual fund of information concerning sun, moon, stars, wind and weather carries out the basic character of the booklet, which preaches crisply and snappily the doctrine of safety first.

PERSONALS

M. E. Cornelius, representative of the Equitable Trust Company of New York, was a caller at the offices of the Mining Congress during January.

A. G. MacKenzie, of Salt Lake City, Secretary of the Utah Chapter American Mining Congress, spent several days in the National Capitol making the Mining Congress offices his headquarters. Mr. MacKenzie has returned to his home.

H. W. Seaman, of the Trojan Mining Company, Chicago, and a director of the American Mining Congress, spent several days in Washington and New York during the month.

A. Cressy Morrison, of New York, was in Washington during January and paid several of the Mining Congress officials a visit.

Franklin Black, secretary of the Charles Pfizer Company, of New York, called at the offices of the Mining Congress during January.

H. W. Prichett was in Washington with Mr. MacKenzie in the matter of the freight rate inquiry before the Interstate Commerce Commission.

R. C. Allen, of Cleveland, was in Washington and conferred with Mining Congress officials regarding the formation of the Special Tax Committee of the American Mining Congress.

George H. Crosby has gone to his home in Duluth for a short stay, but will return to Washington within the next few weeks.

T. L. Lewis, of Charleston, West Virginia, called at the offices of the American Mining Congress while in the city.

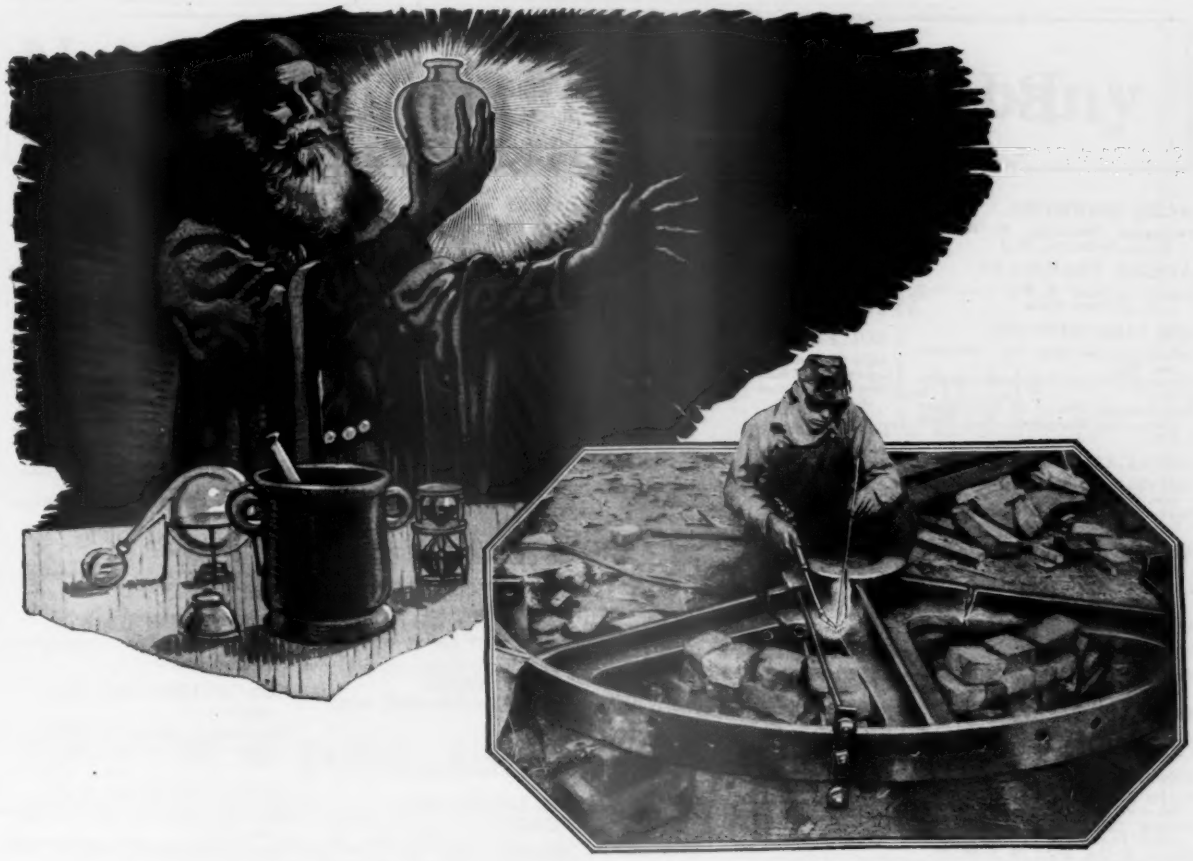
N. S. Greensfelder, of the Hercules Powder Company at Wilmington, consulted with Mining Congress officials on the proposed Manufacturers' Division when in Washington January 6.

Albert P. Meyer, secretary of the Allen S. Davison Company, Pittsburgh, was in conference with Mining Congress officials, when he was in Washington during the month of January.

MANGANESE DEVELOPMENT IN CENTRAL AMERICA

DEVELOPMENT OF MANGANESE deposits in the Province of Colon is the subject of completed negotiations which have been made by an American syndicate, known as the Hyatt Panama Manganese Company, with the Republic of Panama, according to advices reaching the Department of Commerce.

The deposits begin near the junction of the Bequeron and Diable rivers, extending to the point of junction with the Peluca River. They are said to be of high value and practically inexhaustible.



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du Pont Powder Co., The E. I., Wilmington, Del.
Giant Powder Co., Wilmington, Del.
Hercules Powder Co., Wilmington, Del.
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American Mine Door Co., Canton, Ohio.

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Lidgerwood Mfg. Co., 96 Liberty St., New York City.

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United Iron Works Co., Kansas City, Mo.
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CAR-HAULS
Car-Dumper & Equipment Co., Chicago, Ill.

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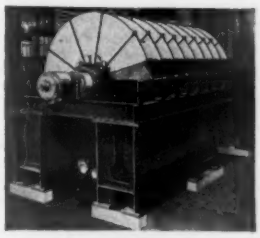

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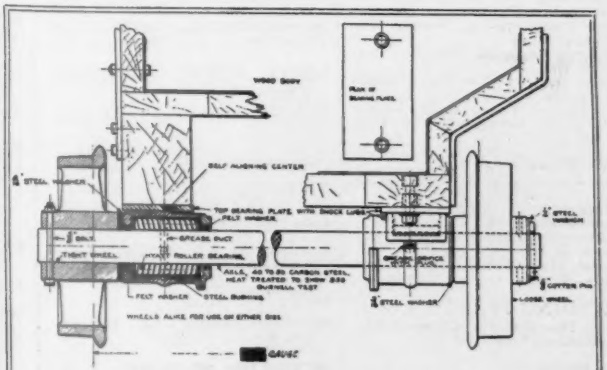

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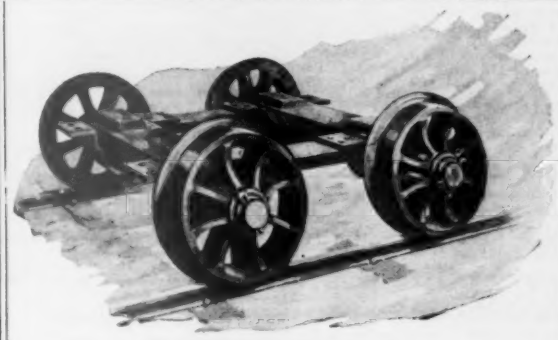

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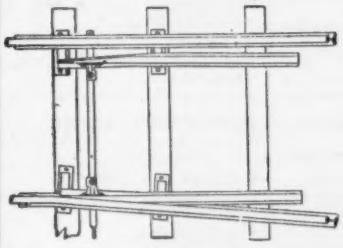

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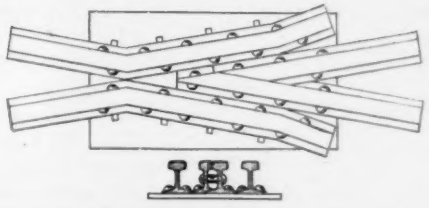

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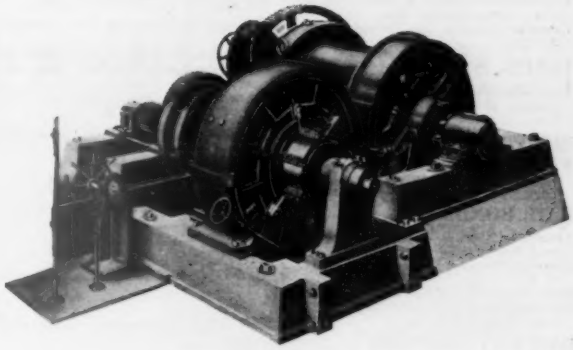

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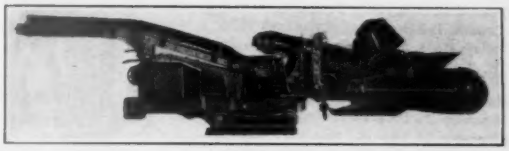

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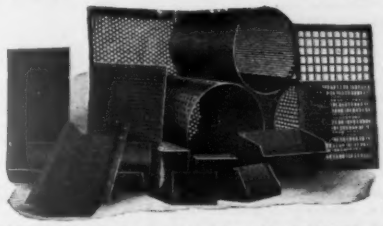

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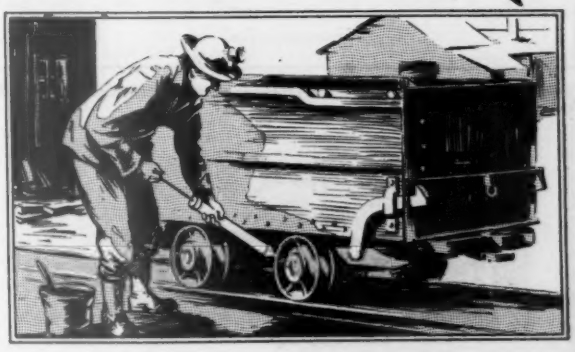

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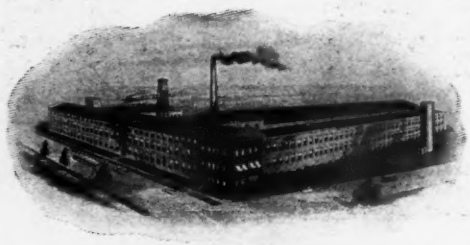

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